



Abstracts of the
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**25TH ANNUAL CONFERENCE OF THE
AUSTRALASIAN PRIMATE SOCIETY**

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CONFERENCE ORGANISING COMMITTEE

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Why Not Let The Monkeys Manage The Monkey House?

Jon Coe

Jon Coe Design

Jon Coe, a leading innovator in the design and management of primate facilities in zoos, sanctuaries and the research community, traces the evolution of design for animal well-being and predicts the next frontier will be giving captive animals significant choices leading to greatly increased levels of well-being, self-direction and independence within a symbiotic relationship with care givers.

BIOGRAPHY

Jon Charles Coe, MLA, has over forty years experience in planning, landscape and exhibit design. His Harvard University master's thesis on animal behaviour in zoo design was just the beginning of his specialized interest in the interaction of habitat and behaviour.

Since then Jon has designed animal facilities for zoos, sanctuaries, aquariums and botanic gardens, including over 150 projects in seven nations.

These include 10 projects for orang-utans, 5 for chimpanzees, 12 for gorillas and 7 for other primate species.

Believing 'nature is the model for design' he has visited chimpanzee habitats in West Africa, gorilla habitats in West, Central and East Africa and orang-utan habitats in Sumatra. Jon has published over 50 papers on zoo design and theory, including 23 papers on primate facility design and enrichment. These include contributions to the American Zoo Association *Husbandry Manuals* for Orang-utans, Chimpanzees and Gorillas and to books like *The Care and Management of Captive Chimpanzees* (L. Brent, Editor). Jon's paper on facility design for bachelor gorilla groups will soon appear in the *Journal of Zoo Biology*. Jon has been a featured speaker for groups like the Jane Goodall Foundation, the American Veterinarian Association Animal Welfare Forum, the American Association for the Advancement of Science and the Smithsonian Institution, as well as numerous international universities.



<http://www.joncoedesign.com>



Visual Self-Recognition In Primates

Thomas Suddendorf

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Mirror self-recognition continues to be the most widely used nonverbal measure of self-awareness. However, controversy still surrounds basic questions about who can pass the task and what precisely passing indicates. Systematic experiments are the key to progress to these vexing questions. Here I will review the results of a series of recent studies our group conducted with chimpanzees, gibbons, and human children. We employed several novel variations of the classic task to determine what the task measures, when children achieve competence and whether lesser apes can pass.

BIOGRAPHY

Thomas Suddendorf is an Associate Professor in the School of Psychology at the University of Queensland. He investigates the cognitive abilities of primates and young children, and uses such data to reason about the evolution of the human mind. Of particular interest to him are representational capacities such as those related to understanding of self, time and mind.



His work has attracted both national and international recognitions, such as the Academy of Social Sciences in Australia Early Career Medal and the American Psychological Association Frank A. Beach Award. His most recent articles (2006) were published in *Science*, *Child Development* and *Journal of Comparative Psychology*.

<http://www.psy.uq.edu.au/people/personal.html?id=39>

<http://www2.psy.uq.edu.au/research/ecdu//>



Primates Of Western Uganda: A Biogeographical Essay

Colin Groves

School of Archaeology & Anthropology, Australian National University

The recent IPS Congress in Entebbe, Uganda, was opened by Jane Goodall and by Ugandan President Yoweri Museveni. About 700 primatologists from all over the world, including Australia, attended. The Congress coincided with the publication of a book, *Primates of Western Uganda*.

Uganda is exceptionally rich in (nonhuman) primates for a country of its size, having 25 different taxa. The western quarter of the country is forested (some of the forests are under threat), and the region is broadly the easternmost extension of the Central African rainforest belt; in detail, the distributions of many of Uganda's primates are actually centred in Uganda itself (although only one species appears to be fully endemic to Uganda), and strictly speaking only the Semliki forest can be regarded as part of the Congo forest itself. The prehistory of Uganda's forests has been one of alternate expansion and contraction; the most recent expansion left small pockets on the shores of Lake Victoria. As a consequence of this history, both the forest and the savannah primates have a northern and a southern component. I will briefly outline the diversity of these primates, and reconstruct something of their distributional history.



Secondary Representation in Apes

Emma Collier-Baker, Thomas Suddendorf, Mark Nielsen & Andrew Hill

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The cognitive profile of humans in their second year of life resembles that of other great apes. Like toddlers, but unlike monkeys, great apes have demonstrated mental skills such as invisible displacement understanding, mirror self-recognition, and means-ends reasoning. J. Perner (1991) posited a capacity for entertaining multiple representations of the world concurrently - or secondary representation - to underlie these developments. Data on secondary representational skills in the great apes can inform phylogenetic reconstruction of primate cognitive evolution. To this end, we have been attempting to fill some of the gaps in our knowledge of the representational capacities of great apes, as well as broadening the comparative analysis to include lesser apes. Here I present some of our recent data from chimpanzees, gorillas, orangutans and gibbons on tasks including double invisible displacement understanding, sustained imitation recognition and mirror/ video self-recognition.



Face Recognition In Humans Generalises To The Faces Of Other Primates

Jessica Taubert & Darren Burke

CISAB, Macquarie University

It has been suggested that face recognition in humans may represent a specialised cognitive mechanism adapted for the demands of conspecific individuation in a complex social environment. To date, human cognitive research has focused on the extent to which human faces engage a face-specific processor. Using the performance costs associated with two different image manipulations, this study focused on isolating a behavioural signature for face recognition in a sample of human participants to determine if this type of processing is recruited for nonhuman faces. The findings from two experiments reveal a pattern of results consistent with face-like processing for human and chimpanzee faces, but not chicken faces. It follows that the human visual system may be sensitive to primate morphology but not to faces in general, as the term applies to all species. The implications for the evolution of the human visual recognition system are considered. The possible reasons for the specialisation of face recognition will be addressed by a proposed comparative project that will involve nonhuman primates and avian species.



The State Of Primate Enrichment In Australasian Zoos

Julia Hoy, Peter Murray & Andrew Tribe

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Eleven Australasian zoos housing primates were included in a large international 'captive mammal enrichment survey'. Individuals who directly work with, research and manage captive mammals were invited to participate in the survey which was comprised of three sections. The first section was designed to identify current enrichment practices and the factors that limit the quality and quantity of enrichment provided to captive mammals. The aim of the second section was to ascertain current methods used in the evaluation of enrichment and establish the factors that limit the frequency and quality of this evaluation. A third section was incorporated in the survey to determine respondents' interest in potential applications of an automated enrichment system which is currently being designed to reduce many of the current limitations involved with implementing and evaluating enrichment.

As expected, animals from the Primate order were most often provided with enrichment. However, the survey identified that lack of available staff time was the greatest factor limiting both the provision and evaluation of enrichment. Accordingly, the majority of survey respondents agreed that more enrichment would be provided if this was manageable.

Overall, there was a very high level of interest from Australasian respondents in the applications of an automated enrichment system as a tool to provide and evaluate a greater quantity, variety and frequency of enrichment for captive mammals without requiring additional staff time.



Cranial Morphometrics, Genetics And Taxonomy Of The Colobinae

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The extant Colobinae (Mammalia, Primates) is represented by ten genera and 59 described species (Groves, 2001). The subfamily can be further subdivided into three subtribes, Colobina (the African colobines: *Procolobus*, *Piliocolobus* & *Colobus*), *Presbytina* (the Asian langurs: *Semnopithecus*, *Presbytis* & *Trachypithecus*) and Nasalina (the odd-nosed colobines: *Pygathrix*, *Rhinopithecus*, *Nasalis* & *Simias*). To examine cranial similarities and differences between genera 36 cranial measurements documenting the neuro- and viscerocranium were collected from 196 female and male adults (subequal numbers) and were then subject to principal components analysis (PCA) and canonical variates analysis (CVA). Results from PCA and CVA reveal marked overlap of cranial dimensions between genera (both raw and size-corrected data). These results suggest the cranium of colobines is rather conservative and has not greatly altered despite the genera being geographically widespread and occupying many different ecological niches.

However, when genera are separated by subtribe morphometric overlap is reduced and many features display scaling relationships with body size. Furthermore, in comparison to Colobina and *Presbytina*, the genera of Nasalina are the most distinct.

GROVES, C. (2001). *Primate Taxonomy* Washington, D.C., Smithsonian Institution Press.



Think Outside The Lab: Sanctuaries Are The Future Of Research On Captive Great Apes

Vanessa Woods¹ & Brian Hare^{1,2}

¹Hominoid Psychology Research Group, Max Planck Institute

²Duke University

The increasing ethical dilemma and expense of working with animals, especially apes, in biomedical facilities has prompted a need for alternative research sites. Working with animals in African sanctuaries benefits the animals who have a better quality of life and supports conservation efforts. It also benefits the researchers as the animals have a more natural upbringing and there are more test subjects which leads to higher quality data. This presentation will outline the advantages of working in sanctuaries for behavioural ecologists, geneticists, psychologists, morphologists and primatologists.



Evidence Of Preferred Interaction Partners Within Golden Snub-Nosed Monkey (*Rhinopithecus roxellana*) Social Units

Daniel White

School of Archaeology & Anthropology, Australian National University, Canberra, ACT 0200

The golden snub-nosed monkey, *Rhinopithecus roxellana*, exhibits a typical Asian colobine social system of all-male units and one male-multi-female units. Little is known about the social structure within these units. Data were collected on adult and sub-adult individuals within two troops of semi-free ranging *R. roxellana* at The Shanghai Wild Animal Park and a provisioned troop within the Qinling Mountains, Peoples Republic of China. Social relationships, affiliative, agonistic or other, manifested themselves in measurable differences in the selection of partners for these behaviours. Individuals showed a significant preference [chi square, $\alpha=0.05$], for interacting, both positive and negative, with certain subjects over others. In particular, aggression was directed toward younger individuals. A strong affiliative preference existed between non-nursing females and the unit male. Females with infants were more likely to exhibit affiliative relationships with each other than with females without infants. The results also suggest the presence of mother-daughter based preferences. This study documented the preferences for interactions for some individuals over others within the social units of *R. roxellana*. The selection of partners appeared to be influenced by a number of factors such as age, genetic relatedness and reproductive status.



Plant Species Eaten By Northern Muriquis (*Brachyteles hypoxanthus*) at the Estação Biológica De Caratinga, Mg, Brazil: Implications for the Conservation of this Species

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¹The University of Auckland

²Universidade Federal de Minas Gerais

³The University of Wisconsin, Madison

From 2002 to 2005 we carried out a study of the diet of one troop of the critically endangered northern muriqui *Brachyteles hypoxanthus* in the ~ 1200 ha Atlantic Forest fragment of the Estação Biológica de Caratinga (EBC), MG, Brazil. Data come from direct observation of feeding activities and from seeds found in muriqui's feces. Most feeding trees (FTs) were marked, mapped and their DBH and height measured. In total we recorded 5,473 FTs and analyzed 948 fecal samples. Over 50% of the recorded diet consisted of leaves followed by fruits, flowers and bark. Muriquis ate ripe and unripe fruits from a large number of species of trees and lianas, but nearly 50% of their total diet corresponded to less than 10 species. Practically all seeds found in the feces were intact and ranged in size from tiny *Miconia sp.* to large *Spondias venulosa*. Feeding trees were on average slightly larger in DBH and height than the average for the forest and some showed a marked clumped distribution in space. The 990 ha disturbed secondary forest of EBC supports 226 muriquis, representing the highest density known for *Brachyteles*. Our results suggest that such high carrying capacity is partly due to the muriquis' opportunistic feeding on the leaves and fruits of pioneer and climax species as well as their folivorous proclivities. We believe that muriquis thrive in secondary forest fragment such as the one studied here bringing our attention to the potential value of these widespread marginal habitats to the conservation of this species.



Lemur catta: A Nutritional Perspective

Christine Halais

Visiting Research Fellow, Perth Zoo

Lemur catta is the most numerous species in the family Lemuridae to be held in captivity. The free-ranging population in Madagascar is predicted to be on the decline due to degradation of habitat. On the basis of a review of the scientific literature and observations in a habitat of origin, this paper challenges the assumption that the natural diet of *L.catta* is a mixture of frugivory and folioivory. Inclusion of foods of animal origin to the diet of specimens in captivity is recommended.

Energy demands of *L.catta* have been estimated, taking into account seasonal variations in body mass. A call is made for a co-ordinated study of food intake in relation to body mass of captive specimens in the Australasian region, to aid conservation efforts for the species.



Introduction To Ngamba Island Chimpanzee Sanctuary: Ranging Behaviour

Margaret Hawkins¹, Clea Assersohn², Debby Cox³ & Wendy Hartman¹

¹ Zoological Parks Board of NSW

² c/o Prof. A. Whiten, Scottish Primate Research Group, University of St-Andrews, Fife, Scotland, UK

³ Jane Goodall Institute, Entebbe, Uganda

In October 1998 thirteen female and two young male chimpanzees (*Pan troglodytes*) were introduced onto Ngamba Island, Lake Victoria, Uganda. Daily for two weeks they were followed as they moved around the island by trained volunteer observers, each observing a different focal chimpanzee. Fifty hours of data were collected on each focal. Data on focal activity and interaction was collected by continuous sampling, recording events and behavioural state changes. Data on location and nearest neighbour was collected concurrently by instantaneous sampling with a 5 minute time interval. The area of the island visited increased though the observation period with the older females, some of whom had previous island sanctuary experience, ranging further than the younger chimpanzees, who initially spent less time in the forest. The chimpanzees usually travelled in groups with habitual companions. Over the two weeks the patterns of activity varied, with periods of travel and foraging alternating with periods spent resting and feeding in the clearing close to the camp. These results have application in understanding how chimpanzees respond to introduction to large natural areas such as sanctuaries.



Nutritional Considerations For Optimising Health In Captive Primates

Debra Mcdonald

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Wild feeding ecology must be considered when formulating diets for captive primates. Three important nutritional considerations include:

1. *Ascorbic acid* (vitamin C) is a dietary requirement for most primates, with marmosets having a higher requirement than humans. The high ascorbic acid content of wild ginger offers antimicrobial properties that may influence gut microflora by supporting resistant strains and inhibits protozoal parasites as well as bacterial symbionts. In mountain gorillas wild ginger is particularly active against *Salmonella* species and Gram negative bacteria. Dietary excesses of vitamin C may contribute to iron storage disease (particularly problematic in lemurs) by enhancing iron uptake and may be counteracted by high dietary tannin concentrations
2. *Gum exudates* vary in nutrient composition, with some high in calcium and others high in hydroxyprolines that can bind potentially harmful tannins. The indigestible raffinose sugars may promote colonisation of beneficial gut bacteria. While marmosets have an enlarged caecum to support the fermentation of gums, tamarins must rely on feeding strategies to enhance microbial digestion. Gums voided in less than two hours remain unchanged but feeding late afternoon increases gut passage time from 2.5 hours to 16.5 hours, as tamarins do not defecate overnight. Wild tamarins feed on gum around 4pm so feeding captive tamarins gum early in the day may have no nutritional benefits
3. *Vitamin D* is a fat-soluble vitamin necessary for adequate absorption of calcium. While Old World Monkeys can utilise both forms (vitamin D₂ from plants and vitamin D₃ from animals or exposure to UV-B radiation), New World Monkeys can only utilise the D₃ form. Marmosets and tamarins have a higher dietary requirement for vitamin D₃ due to target organ receptor resistance to the active form of the vitamin



My Month In The Human Zoo: Implications For Captive Primate Welfare

Carla Litchfield

School of Psychology, University of South Australia

Over the period of one month in January 2007, four groups of six human volunteers spent a week each in an unused Adelaide Zoo primate exhibit during zoo opening hours. This "Human Zoo" concept was designed to:

- Encourage people to consider our place in the world and our impact on the global environment
- Provide a platform for research on improving captive well-being for great apes
- Raise awareness of the threats to primates in the wild
- Raise funds to build an open-range chimpanzee exhibit at Monarto Zoological Park in South Australia

I was locked into the Human Zoo for the entire month, which provided me with a unique opportunity to spend time in an enclosure and experience things from the animals' point of view. I will use this information to inform future enrichment projects and enclosure designs, in order to further enhance psychological well-being of captive primates.



Bonobo vs Chimpanzee Cooperation

Brian Hare^{1,2}, Alicia Melis¹, Vanessa Woods¹, Sara Hastings¹ & Richard Wrangham³

¹hominoid Psychology Research Group, Max Planck Institute

²Duke University

³Harvard University

To understand constraints on the evolution of cooperation we compared the ability of bonobos and chimpanzees to cooperatively solve a food-retrieval problem. We addressed two hypotheses. The 'emotional reactivity hypothesis' predicts bonobos will cooperate more skilfully because tolerance levels appear to be higher in bonobos. This prediction is inspired by studies of domesticated animals which suggest selection on levels of emotional reactivity can alter flexibility in social problem solving skills. In contrast, the 'hunting hypothesis' predicts that chimpanzees will cooperate more skilfully, because only chimpanzees have been reported to cooperatively hunt in the wild. We indexed emotional reactivity by measuring social tolerance while co-feeding and found that bonobos were more tolerant of co-feeding than chimpanzees. In addition, during co-feeding tests only bonobos exhibited socio-sexual behaviour, and they played more. When presented with a task of retrieving easily sharable food, bonobos and chimpanzees were equally cooperative. However, when the food reward was highly monopolisable, bonobos were more successful than chimpanzees at cooperating to retrieve it. These results further support the emotional reactivity hypothesis and the idea that selection on temperament may in part explain variance in social skill across species - including hominoids. This presentation will review our results and discuss the implications for future studies.



Feeding Flexibility Of Wild François' Langur At Mayanghe Nature Reserve, China

Gang Hu¹, Hongzhang Luo², Bin Wang³ and Ankang Wu³

¹ School of Archaeology & Anthropology, Australian National University

² Guizhou Forestry Deapatment

³ Mayanghe Nature Reserve Conservation Management Bureau

Fieldwork was conducted at MNR, approx 28°37'30" - 28°54'20"N, 108°3'58" - 108°19'45"E. François' langur showed great flexibility in the food species and feeding items used in different seasons and habitats:

Totally, the langurs fed on 164 species, of which the 10 top species contributed 51% of feeding records. Langurs fed on 90 species in spring (to which the 10 top species contributed 52.0%), 73 species in summer (8 species, 52.9%), 75 species in autumn (8 species, 51.3%), 67 species in winter (5 species, 52.7%). Feeding flexibility was also shown in different habitats: langurs at one site (LYY-undisturbed habitat) consumed more species and had more staple species in their diet than those at the other (XGB-disturbed habitat bordering farmland) in all seasons except for winter, in which the LYY langur fed on 46 species (the top 3 species contributed 50.2%), while the XGB langur fed on 56 species (5 species, 51.2%).

Feeding items included young leaves (43.3%), mature leaves (20.6%), buds (2.4%), flowers (1.1%), fruits (25.7%), seeds (6.5%), shoots and roots (0.4%). The dietary showed great seasonality: young leaves consumption declined from 83.3% in spring, to 63.8% in summer, 13% in autumn and only 9.8% in winter, while the contribution of mature leaves, fruits and seeds increased from spring to winter: from 9.6% to 15%, 28.5% and 30.1% (ML), 4.6%, to 15.3%, 41.7% and 43.1% (fruits), and 0.8%, to 1.7%, 11.2% and 12.5% (seeds). The XGB langurs consumed more mature leaves and seeds than did the LYY langurs: 23.3% vs 18.9%, 12.2% vs 2.9%.



Variation In Great Call Structure Of Hybrid Gibbons In Central Borneo

Sunny Sanderson

School of Integrative Biology, University of Queensland, St. Lucia, QLD 4072

A study on the variation in great call structure of hybrid gibbons (*Hylobates agilis albibarbis* x *H. muelleri*) was conducted throughout the headwaters of the Barito River in Central Kalimantan, Indonesia. Gibbons are small, pair-bonding, arboreal apes found throughout the tropical rainforests of South-East Asia. One of their most distinguishing characteristics are their species-specific and sex-specific patterns of vocalisations known as “songs”. The female gibbon’s great call is regarded as the most spectacular sound within their vocal repertoire and has an easily recognisable, stereotyped structure. As a result, these calls have often been used as the basis of species identification in gibbons.

The Barito Ulu watershed in Central Kalimantan, Indonesian Borneo, is one of only three sites in South-East Asia where hybridisation between two different species of gibbon has been documented. This hybrid zone is the only one known to have occurred naturally and represents a unique opportunity to study the variation of great call structure of gibbons in and around a long-standing hybrid zone in relatively unlogged forests. This project was a follow-up to research that was carried out in the region 15 years ago (Mather, 1992), allowing us to better understand the composition of this hybrid zone, whether it is changing, and if it is continuing to increase in size.



Nonhuman Primates, Health And Importation

Margaret Leggoe

Biosecurity Australia

Biosecurity Australia has a role to play in the importation of nonhuman primates into Australia. That role is to assess what, if any disease agents may be introduced by such an importation, the likely impact if such an introduction were to take place, and what quarantine measures may be used to minimise the risk. This paper will look at two primate retroviruses and run through the process that Biosecurity Australia uses in its risk assessment.



Cognitive Enrichment: The Final Frontier

Jo Davis

School of Psychology, University of South Australia

It has long been noted that a captive environment produces behavioural artefacts in non-human primates that are sometimes harmful. Environmental enrichment programs are designed to reduce or eliminate these behaviours, and are traditionally based around food related activities. An emerging field is cognitive enrichment, where the mental capacities of the non-human primate are challenged in a fashion that goes beyond basic consumatory enrichment. Great apes in particular have been shown to possess the cognitive capacity around that of a three year old child, and thus require psychological stimulation to a particularly high degree. I will discuss my PhD experiments within the context of existing information on cognitive enrichment and review efforts in this field to date.



Factors Influencing The Behaviour Of Juvenile Orangutans In Rehabilitation

Kris Descovich

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Wide-spread destruction of orangutan (*Pongo pygmaeus*) habitat in Indonesia & Malaysia, is increasing the number of orphaned orangutans being housed in rehabilitation centres. To date, little data have been published on pre-adolescent behaviour both in the wild, and during rehabilitation. By analysing current orangutan behaviour within rehabilitation centres, it is then possible to determine what rehabilitation factors may influence the behaviour and success of post-release orangutans. This study analysed the behaviour of 40 rehabilitating, juvenile orangutans in a semi-wild forest environment in Central Kalimantan, Indonesia. The major aims of this experiment were firstly to investigate how behaviour is affected by observation time, gender, health, housing group (pondok), body weight and the amount of time spent in rehabilitation. Secondly, a general behavioural profile was also developed to gain a better understanding of how a typical rehabilitating, juvenile orangutan could be expected to behave. Focal activities in this study included feeding/foraging, locomotion, play, resting, nesting and human interaction. These results indicate that focal behaviours are each affected by different factors. The factors with the largest behavioural impact appear to be body weight and the rehabilitation environment. The behavioural profile indicates that during the observation period, the juvenile orangutan participates the most in locomotion, eating and resting activities.



It's Every Monkey For Themselves

Vanessa Woods

It's Every Monkey for Themselves is a story of a young woman grappling with the usual big issues - love, sex, friendship, and figuring out what she wants from life - while at the same time attempting to conduct research on monkeys, shoot a documentary and not get herself killed in the jungles of Costa Rica.

Over the course of a wild, bruising and tumultuous year, Vanessa learned that not all monkeys - or people - are alike, that friendship can be more important than sex, and that sometimes it takes a brush with death and an abscess the size of a melon on your head to make you realise that being pretty isn't always enough.

This is a story of love, loss, bitter rivalry and vicious battles - and that's just the monkeys.



Lowland Gorillas In Gabon: An Expatriate Experience

Annette Henderson

While working in a mineral exploration camp in the remote forest of Gabon in the 1970s, I helped to rehabilitate an orphaned and injured female Western Lowland Gorilla, aged approximately 5 months, whose mother had been shot by a village hunter for eating bananas from his garden. At the time I was a secretary, with no background in animal studies. Caring for the infant, whom we named Josie, was a turning point for me. Sensitised to the plight of gorillas, and inspired by the example of the 3 'ape ladies', I returned to Australia and spent 5 years becoming an anthropologist. Although my dream of doing fieldwork with great apes did not eventuate, the encounters with gorillas have remained the central events of my life. I am now writing about them in a memoir of 15 months living and working in Africa.

The two extracts I want to read to you reflect two different kinds of intimate encounters with Lowland Gorillas. The first concerns Josie in the context of her life with us in the camp. Her arrival marked my first contact with a gorilla, when we had been in the camp just 3 months. The second takes place at the CNRS Biological Research Station at Makokou 6 months later, when I visited 2 groups of captive-raised great apes being returned to the wild on an island in the Ivindo River.



Poster

Reason For Hope: Roots & Shoots (Rainbow Ridge Steiner School)

Elisa Da Silva

Roots & Shoots Coordinator (Rainbow Ridge Steiner School)

Roots & Shoots is the Jane Goodall Institute's global environmental and humanitarian education program. Founded in Tanzania in 1991, the global *Roots & Shoots* network has grown to over 8000 groups in 96 countries around the world. *Roots & Shoots* members practice care and concern for: animals, the environment, & the human community by initiating community service projects in these areas.

Roots & Shoots teaches young people the interconnectedness of all life forms, engenders ecological consciousness, imaginative action and collective responsibility: *'But we have a choiceWill you use the gift of your life to make the world a better place for all living beings?'* - (Jane Goodall)

Since Jane Goodall's recent Australian lecture tour- *Roots & Shoots (Australia)* was born with new groups established in schools & communities around Australia, including Alexandra, VIC (Murrundindi R&S), Cardiff (Garden Suburb Public School R&S), Adelaide Zoo (ZooYouth) and (Maree, R&S) and Northern Rivers (Rainbow Ridge Steiner School R&S), NSW.

Roots & Shoots (Rainbow Ridge Steiner School) focuses on the themes of: wildlife conservation, environment education & intercultural awareness. These themes are presented through expressive arts activities: nature journaling, environmental sound collage, performance poetry, sound/art, music-theatre, storytelling, drumming...

Jane Goodall has inspired many of us with her reverence for the natural and animal world, her empathy with chimpanzees- her commitment to their welfare in captivity and their conservation in the wild. The poster design reflects each student's unique expression of hope and was inspired by Jane Goodall's message of hope:

Roots & Shoot's resource material will be displayed and selected JGI merchandise will be available to order.

www.janegoodall.org www.rootsandshoots.org



Poster

The Present Status Of Eritrean Primates

Desale Yosief

Department of Anthropology and Archaeology, Asmara University

The poster will demonstrate the present status of Eritrean primates. Eritrean primates include the Hamadryas baboon (*Papio hamadryas hamadryas*), Olive baboon (*Papio hamadryas anubis*), and Grivet monkey (*Cercopithecus aethiops aethiops*). The poster will demonstrate quantitative and qualitative data of these primates. Parallel with this, it will also demonstrate the geographic location, habitat, feeding habits, reproductive strategies, social behavior, and migration patterns of these primate species. In addition to this, issues relating to the structural and financial problems confronting the nation on studying and conserving its primates will be addressed. The poster will also show strategies for awareness creation so as to facilitate the care and maintenance needed, and build a sustainable future for the primates of Eritrea. Finally the mission and vision of the nation on primates as a centre of research will be discussed as well as some recommendations for the growth and development of primate research in the nation.



Eurasian Blackbird Predated By *Rhinopithecus roxellana* In Zhouzhi National Natural Reserve, China

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Although there are some reports of primates eating animals, predation on vertebrates by herbivorous leaf-eating primates has not previously been described. We present the first such observation: Sichuan snub-nosed monkeys (*Rhinopithecus roxellana*) preyed upon the birds in Zhouzhi national natural reserve of the Qinling Mountains of China. Individuals from a semi-provisioned troop of *R. roxellana* caught and consumed a Eurasian blackbird (*Turdus merula*). This event suggests that *R. roxellana*, previously described as an herbivorous leaf-eating primate, may be partially carnivorous and the correct classification of this species would be omnivorous. Furthermore, a food-sharing behavior among higher-rank members was observed in the one-male unit when hunting the vertebrate prey species.



Relative Orbit Size In Mammals: Primates And Non-Primates Compared

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Previous studies of relative orbit size in primates have found a negative allometric relationship between orbit diameter and body size, as well as correlations between relative orbit diameter and diel activity pattern. These results are generally assumed to hold true for all mammals. However, few or no previous studies have included large numbers of non-primate mammals. This study compares data from original skull length and orbit diameter measurements with data from the literature for a total of 126 primate and 213 non-primate taxa, including both fossil and recent species. Least-squares regression analyses are performed for the whole sample, as well as for primates and non-primates separately. The results support previous studies in confirming the general pattern of negative allometry for the orbit diameter - skull length relation in both mammals in general and primates in particular. However, previous studies are not supported regarding the correlations between relative orbit size and diel activity pattern. Diurnal non-primates show negative allometry while nocturnal and cathemeral non-primates show positive allometry regarding their orbit diameter - skull length relation. In primates, the opposite pattern is true; diurnal species show positive allometry while nocturnal and cathemeral primates show negative allometry. Thus, when seen in this wider mammalian context, the correlations between relative orbit diameter and diel activity pattern found in previous primate-based studies hold true for non-primates but, paradoxically, not for primates.



Environmental Enrichment At The National Marmoset Colony

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Monash Animal Services has managed on behalf of the NHMRC, the National Marmoset Colony for over eight years. During this time there has been a significant evolution of the environmental enrichment program for the marmosets.

A well developed enrichment program makes a marked contribution to the health and well-being of non-human primates. The program implemented at Monash Animal Services aims to promote naturalistic behaviours and involve marmosets in activities as similar as possible to those found in the marmoset's natural habitat. The program has involved improvements to caging and caging styles, access to external environments, presentation of diet, and an environmental enrichment program based on six key principles:

- social interaction
- cage furnishing
- food based activity
- foliage stimulation
- non-food based activity
- sensory stimulation

The implementation of an environmental enrichment program is not without its challenges. Colony staff have identified and worked through occupational health and safety issues, time constraints, management and colony issues including the territoriality of marmosets and the need for introductory periods for new enrichment.

An environmental enrichment program aims to create the best possible and most natural captive environment for animals. The program implemented by Monash Animal Services at the National Marmoset Colony has resulted in observable increases in foraging behaviours and a notable decrease in repetitive pacing behaviours. This success has inspired Monash Animal Services to continually create and implement new ideas in our environmental enrichment programs.

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Impact Of Male Takeover On Intra-Unit Sexual Interactions And The Subsequent Inter-Birth Interval In Wild *Rhinopithecus roxellana*

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Data were collected on sexual interactions before and after a male takeover of a one male unit (OMU) of Sichuan snub-nosed monkeys (*Rhinopithecus roxellana*) in the Qinling Mountains, China. The original unit consisted of an adult male, two adult and two subadult females, two female juveniles and a single infant. Following the takeover, the new resident male copulated with one adult female, which was not lactating. Subsequent to the disappearance of her infant, the second (lactating female) entered breeding condition and began to solicit copulation with the new resident male. Subadult females also engaged in matings with the new male. The new resident male was observed mating, on three occasions, with females in two other OMUs. These are the first observations of sexual behavior in free-ranging Sichuan snub-nosed monkeys after an OMU takeover. Sexual interactions play an important role in establishing relationships between a new male and the resident females in the OMU.



A Survey Of Attitudes Of Stakeholders In The Zoo Industry Towards The Husbandry Of Great Apes

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The husbandry of captive great apes was investigated to gain a greater understanding of those features of their captive environment that may be critical in maintaining a high standard of welfare for these animals.

An on-line survey examining husbandry requirements for captive great apes was distributed internationally to a number of stakeholders including relevant zoo staff, primatologists and members of animal welfare groups. A total of 359 respondents completed the survey (and a further 204 partially completing the survey). Conjoint analysis was used to calculate the average importance scores for 17 attributes of great ape husbandry, and the rank order of importance for each of the attributes levels. The data was then analysed by allocating the respondents into a number of demographic categories including stakeholder group, gender, amount of education and experience with apes, and the great ape species about which they responded for. The results showed that the order in which the respondents ranked the attributes was significantly influenced by their stakeholder group and the species for which they answered. Overall, respondents indicated that social housing, enclosure appearance, group size, space allowance and enclosure furnishings were the most important features of great ape husbandry. Feeding interval, staff qualifications, the inclusion of plants within the enclosure, enrichment rotation, and the availability of an outdoor enclosure were indicated as being less important. These results will contribute to the development of a Great Ape Husbandry Index (GAHI), which will allow a high level of welfare to be maintained for captive great apes.



Inferential reasoning in apes

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Using the 'cup task' (an object-choice task that requires subjects to deduce the location of a hidden reward on the basis of limited auditory or visual information), Call (2004) found evidence of inferential reasoning by exclusion in great apes. Specifically, individual gorillas (*Gorilla gorilla*) and bonobos (*Pan paniscus*) appeared to make inferences in both the visual and auditory domains. Among chimpanzees (*Pan troglodytes*), successful performance was limited to the visual domain, while none of the orangutans (*Pongo pygmaeus*) in Call's studies demonstrated any inferential ability. Using the same experimental paradigm, the present study yielded evidence of inference in *both* domains for two chimpanzees, and in the visual domain for one orangutan (*Pongo abelii*). An important focus of the current research is to compare the cognitive capacities of lesser apes or gibbons with those of great apes: Very little published research has addressed gibbon cognition, despite its direct relevance to the phylogenetic reconstruction of hominid evolution. Procedures have been adapted to better suit the attentional and dispositional characteristics of gibbons, and testing is underway with siamangs (*Symphalangus syndactylus*), white-cheeked crested gibbons (*Nomascus leucogenys*), and white-handed gibbons (*Hylobates lar*).



Children, Chimpanzees And The Social Motivation To Copy Others

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Imitation is a fundamental human behaviour. We reproduce the actions of others with a frequency and fidelity that has yet to be identified in any other species. By directly imitating we are provided with a particularly powerful form of learning that permits us to rapidly acquire new skills while avoiding the potential pitfalls of individual trial-and-error learning. However, the drive to acquire new skills is not the only reason to copy others: We also do so to be liked by others and to show them that we are like them. In this talk I will present the results from a series of studies documenting how young human children use imitation as a means of social binding and will compare these results to studies showing that chimpanzees rarely imitate in this way.



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