

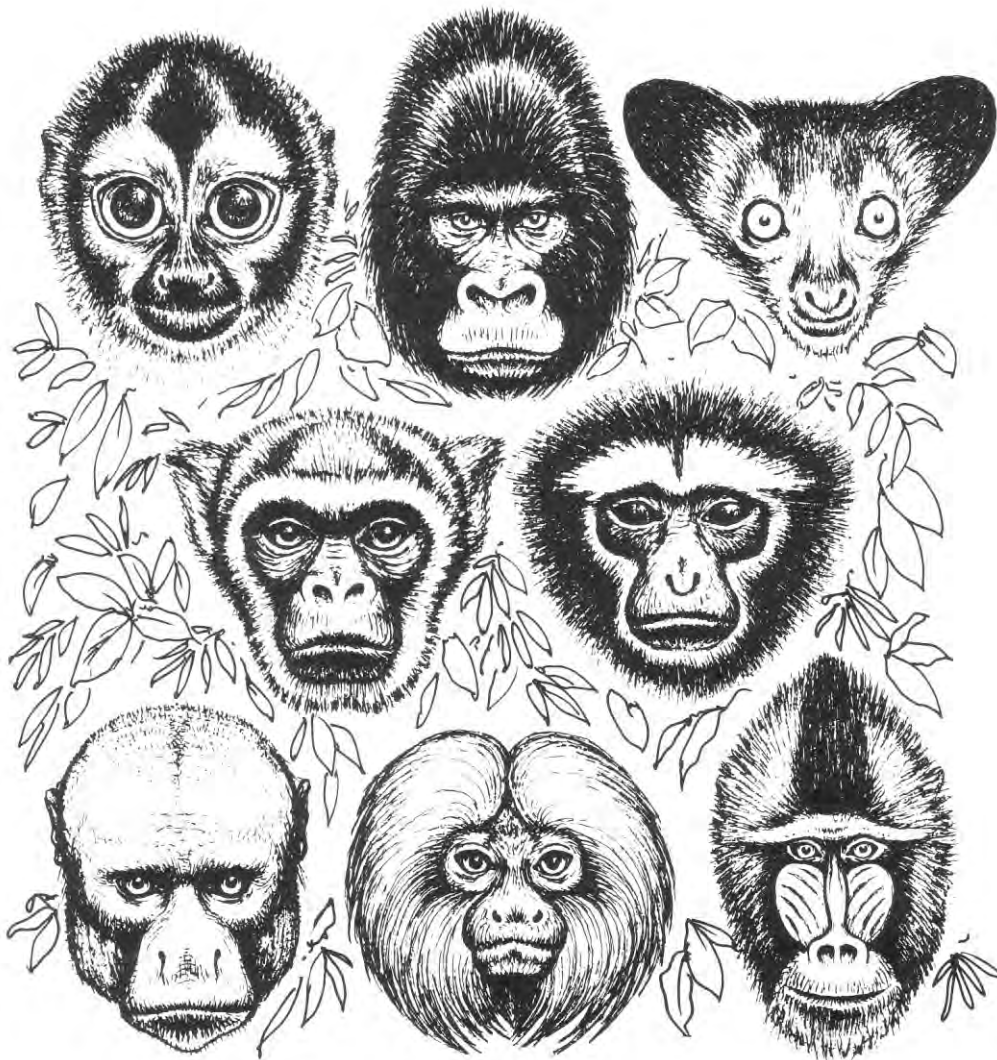
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PRIMATE EYE

Primate Society of Great Britain

No. 64

FEBRUARY 1998



THE PRIMATE SOCIETY OF GREAT BRITAIN

Registered Charity No. 290185

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Items for future issues of *Primate Eye* should be sent to:

Dr Bill Sellers
Department of Anatomy
University of Edinburgh
Medical School, Teviot Place
Edinburgh EH8 9AG

email: Bill.Sellers@ed.ac.uk
Tel: 0131-650-3110 Fax: 0131-650-6545

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EDITORIAL

It is certainly true that primatologists are a very diverse group of people. Without much difficulty, one can think of friends and colleagues who are without doubt *bona fide* primatologists who would consider themselves academics, clinicians, engineers, political activists and employees in industries as diverse as leisure and pharmaceuticals. Even within these broad areas, those of us who study primates are widely spread. In academia, there are no departments of primatology in the UK. There are a handful of physical anthropology departments which probably come the closest, but certainly in Scotland, most of the people who actually study primates work in psychology departments. In other parts of the UK, zoology, anatomy and archaeology departments may hold the bulk of the academics who are interested in primates.

Such a mixed group of people is one of the reasons why primatological conferences are such interesting events with their mix of differing skills and approaches to the study of our favourite group of mammals. However, this lack of uniformity is not without its difficulties. Consider the situation of the 17 year old sitting at home with a UCAS form trying to make their choices from the huge list of possible higher education options. Many of these people have a strong interest in whole animal biology and some have already decided that they are fascinated by primates. Choosing an undergraduate degree program where you will get much exposure to primates is not easy, and although we would like to think that all our prospective students are quite capable of phoning departments or of looking through the various academic directories to see what staff at a particular institution are actually interested in, this is not a realistic option. In addition, school careers services are not able to help with this level of detail and the various guides to which university to choose seem more interested in emphasising the social life on offer than specifying individual course options. At postgraduate level, it is rather easier, but even there, one might be forgiven for not considering, for example, the London School of Economics as an obvious place to undertake primate research.

Similarly, there is a problem with the current way that research output is assessed. Research assessment will always be an imperfect undertaking. As one of my colleagues was heard to say in response to comments about his particular, somewhat unsuccessful, strategy for increasing his research rating, "posterity is my only arbiter." However, RAE performance is a reality in our daily lives and whilst attempts are made to level the playing field by not comparing astrophysicists to epidemiologists to electrical engineers, submissions are still made largely on a departmental basis and goalposts are set at positions suitable for that discipline. So primatologists are judged as psychologists, zoologists or whatever. This may not matter. It may even be desirable. However it is important to realise that it does have its drawbacks. Many biology departments are nowadays dominated by cell biologists of one sort or another who are bringing in a great deal of money and are publishing in journals with much higher impact factors than those in other fields and consequently it can be very difficult for whole animal biologists to compete.

There are some rather unfortunate consequences of this state of affairs. In some Universities, research is considered as the primary goal, with teaching a poor second. Driven by the need to be highly rated at research, departments are quite naturally tempted to fill posts with people who will boost their RAE rating. These people will often, therefore, not be whole animal biologists so that, for example, a zoology department where a student will have arrived expecting to be able to study at least mammals, if not necessarily primates, will have a dwindling number of staff interested in teaching such courses. Of course, there are those that would argue that this is precisely the role of a research led teaching environment. Courses taught will follow current research priorities and lead to the production of graduates suitable to perform well in the current research environment. However, there is a certain self-fulfilling air about this statement. Research priorities are set by researchers. Once a particular subject has been judged to be "fitter" than another, natural selection takes over and the competitive exclusion principle leads to a single research topic being the only viable option, generating ever more papers, more journals and more citations than any other subject.

There are a number of solutions. Primatology as a discipline needs to work hard for greater recognition both as a research and a teaching area. In teaching, this is beginning to happen. Students have a great deal more choice than they did in the past due, in part, to increased modularity of science courses. This allows them to "vote with their feet" and modules are judged as successful or not by the number of students attending - especially in many institutions where funding directly follows students. This encourages universities to take on staff who can teach the courses that the students want, and students are very enthusiastic about primatology. In addition, the growth of the internet, especially with web browsing facilities being available in many sixth forms, allows potential students to check what will be available at the colleges and universities they are thinking of applying to. On the research front, it is probably unreasonable to think that the level of funding that will be available for primate research will increase, but it is to be hoped that the next RAE will allow a great deal more flexibility in allowing researchers to be assessed in smaller, more field oriented groups and British primatology can get the recognition it deserves.

BILL SELLERS
January, 1998

ANNUAL GENERAL MEETING OF THE PRIMATE SOCIETY OF GREAT BRITAIN

To be held at 13.00 on Monday, 6 April, 1998 in the Conference Centre,
Bristol Zoological Gardens, College Road, Clifton, Bristol

AGENDA

- 1) Minutes of the previous meeting
- 2) Matters arising
- 3) President's report
- 4) Secretary's report
- 5) Treasurer's report
- 6) Working Party reports
- 7) Election of Council members
- 8) Re-election and election of Officers
- 9) Any other business

MINUTES OF THE PREVIOUS MEETING

Held at 12.30 on Friday 29 November, 1996 in the Meeting Rooms of the
Zoological Society of London

1. Minutes of the Previous Meeting

The minutes were accepted and signed.

2. Matters Arising

There were no matters arising.

3. President's Report

The President warmly thanked Officers of the Society that were retiring: Caroline Ross as Secretary and Hannah Buchanan-Smith as Membership Secretary. She also thanked Douglas Brandon-Jones, Editor of *Primate Eye*, and Julia Casperd, Student Representative to Council who were also retiring.

4. Secretary's Report

The Society has 71 new members, with 31 Full members, 18 Associate members and 23 Student members.

The Society held two successful meetings: the 1995 Winter meeting on the Biology and Conservation of New World Monkeys was a great success and was superbly organised by Hilary Box and Hannah Buchanan-Smith. The papers from this meeting will be published as a special issue of *Folia Primatologica*. The 1996 Spring meeting was organised by Ann MacLarnon and Caroline Ross and held at the Roehampton Institute, London. It was a well attended meeting and it was particularly pleasing to have a number of excellent papers from graduate students and young researchers.

Members of the PSGB were also well represented at the IPS conference in Madison, USA, in August, 1996. Several members also attended the European Federation of Primatology conference in Madrid in October, 1996.

Several unelected positions have recently been filled. Our representative on the European Federation of Primatology is Jan de Ruiter (Institute of Zoology, London) who has already represented the Society at the European Federation meeting in Madrid this year. Tom Sambrook (Durham University) is the new Information Officer. From January, 1997, Bill Sellers (Edinburgh University) will be the editor of *Primate Eye* and Kate Hill (Durham University) is the new Membership Secretary. A new student representative will be appointed.

Another new development this year was the setting up of a PSGB web page: compiled and run by Bill Sellers.

The Secretary thanked the President and other members of Council for their help during her three years as Secretary.

5. Treasurer's Report

The Treasurer's report was outlined and accepted. It will be published in *Primate Eye*.

6. Working Party Reports

a) The Conservation Working Party report and Captive Care Working Party report were published in *Primate Eye* 60 (October, 1996). Both were accepted by the meeting.

b) The Convenor of The Conservation Working Party, Siân Waters, noted that application forms for Conservation grants were now available. She hoped that there would be an increase in applications now that the criteria for eligibility had been widened. There was some discussion about ways of increasing the number of applications, and the President suggested that this be considered at the next Council meeting.

7. Retirement and Election of Council Members

a) Five Council members retired after completing three years; A. Dixon, M. Lahr, A. Patel, C. Rosen and A. Whiten. The President thanked them all for their contributions to the Society.

Two other Council members, T. Rowell and R. Ridley, resigned prematurely because other commitments made it impossible for them to attend Council meetings regularly. The President expressed her regret over their loss to Council.

b) The following Society members were nominated by Council to become members of Council: Louise Barrett, David Chivers, John Fa, Peter Pearce, Ian Redmond and Jan de Ruiter. These nominations were proposed by Robin Dunbar and seconded by Elizabeth Rogers. The meeting unanimously agreed to elect them. There were no other nominations from members of the Society.

8. Re-election and election of Officers

a) Council nominated the current President, Hilary Box, to be re-elected for a fourth year.

She was proposed by Douglas Brandon-Jones and seconded by Phyllis Lee. The meeting unanimously agreed to re-elect Hilary Box.

b) Council nominated the current Treasurer, Geoffrey Hosey, to be re-elected for a third year.

He was proposed by Cyril Rosen and seconded by David Hill. The meeting unanimously agreed to re-elect Geoffrey Hosey as Treasurer.

c) Council nominated Hannah Buchanan-Smith to be elected as Secretary. She was proposed by Elizabeth Rogers and seconded by Jan de Ruiter. The meeting unanimously agreed to elect Hannah Buchanan-Smith as Secretary.

9. Any other business

There was no other business.

Meeting ended 13:00.

COUNCIL NOMINATIONS FOR OFFICERS AND COUNCIL MEMBERS - AGM, 1998

The following members of Council will retire at the AGM in April, 1998: Dr Hilary Box (President), Dr Geoffrey Hosey (Treasurer), Dr Helen Ball, Dr Louise Barrett, Dr Robert Hubrecht, Dr Elizabeth Rogers, Dr Jan de Ruiter, Prof. Christopher Stringer. A full list of present Council members can be found inside the front cover of *Primate Eye*.

The nominations of Council to fill these positions are as follows:

Officers:

President	Dr Phyllis Lee
Treasurer	Dr Charlie Evans

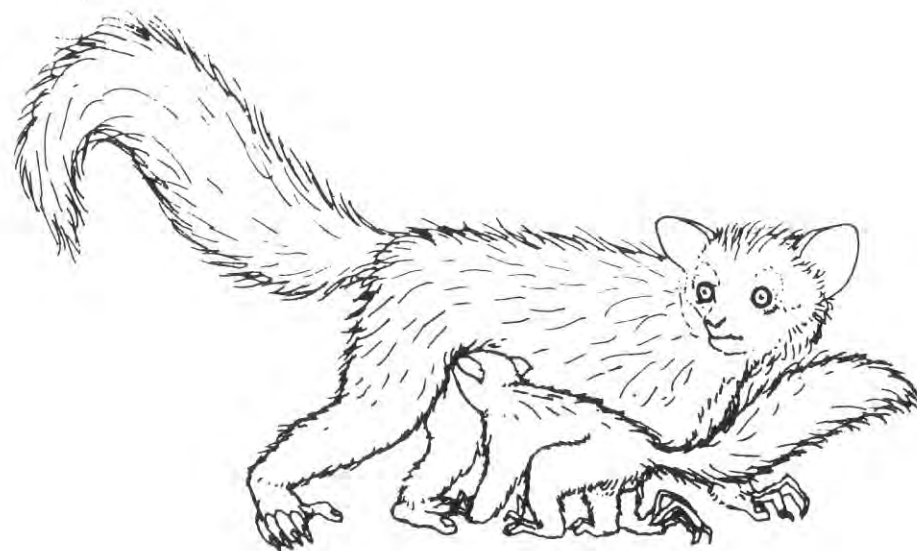
Ordinary Council members: Dr Josep Call, Dr Bryan Carroll, Dr Mark Collard, Dr Celia Heyes, Dr Ann McLarnon, Dr Volker Sommer.

Members of the Society may make nominations for Society Officers and ordinary members. Given that a nominee has agreed to stand, these nominations must be seconded by two other Society members and sent in writing to the Secretary (Dr Hannah Buchanan-Smith) to be received by Monday, 23 March, 1998. Elections will take place at the AGM.

CAPTIVE CARE WORKING PARTY REPORT 1997

The Captive Care Working Party has met twice in the last year. The CCWP has drafted and sent a Council approved submission to the Department of Health on the subject of xenotransplantation, and a response to the Home Office on a draft Community policy on the use of primates as Laboratory Animals. The CCWP is continuing to monitor progress of the European multilateral consultation on the standards of housing and transport of laboratory primates. A paper written by a previous CCWP member on the control of callitrichids was published in *Animal Welfare* 1997 6:231-242. Members of the CCWP have produced a supplementary paper on the control of zoo primate populations, and it is hoped that this will be published in the same journal. The CCWP has maintained an interest in the welfare issues arising out of increase transport times for primates imported into the UK for experimental purposes.

Dr R Hubrecht (Convenor CCWP)
Universities Federation for Animal Welfare



PSGB WINTER MEETING 1997

The theme of the 1997 Annual Winter Meeting was "New Perspectives on Nocturnal Primates". It was held at the Meeting Rooms of the Zoological Society of London on 3 December, and was aptly named, with 10 speakers and nine posters providing much that was new not only in terms of perspectives but also regarding recently discovered nocturnal species, which are not just difficult to find at night but are cryptic even in daylight. As emphasised by Paul Honess, who organised the meeting, six species of galagos were recognised in the 1930s, but more than 17 are known today. Simon Bearder argued convincingly that with new perspectives on these recently discovered species many more new ones will come to light in the near future. I personally found it fascinating. Many new platyrrhines are now being found in the Amazon (two even in the Atlantic forest despite the devastation there) and it is gratifying to see that it is not that we have lagged behind the Old World primatologists, but on both sides of the Atlantic it is merely a matter of knowing where and how to look and having somebody (as Simon Bearder so correctly pointed out) who can cover the ground and understand what they are looking for - looking for the right signs in the right places.

For the galagos (ground covered by Paul Honess and Simon Bearder and their team in the Nocturnal Primate Research Group in Oxford) which are secretive in their habits as well as their identity, you need to look at their faces, their penile anatomy, how long their limbs are (if you can't watch them you have to surmise how they move about by examining their limb proportions), pluck hairs from their scent glands, and snip off a piece of skin (not so painful for the museum specimens) to look at their genes, and besides make careful analyses of their vocalisations. According to Simon Bearder, two species, *rondo* and *matundu*, were "unearthed" by Paul Honess, a strange word to use, although definitely applicable to a third species they discussed - Grant's galago, *Galagoides granti*, which was buried in the past. A poster, presented by Mat Anderson, also showed how hand morphology (patterns of volar hand pads and digit length, also highly revealing in terms of locomotion and posture) can contribute to taxonomic studies, finding consistent differences between species of *Otolemur* and a number of other genera of galagos.

Although tempted, dwelling no more on the revelations of Simon Bearder and Paul Honess who made an excellent start to the day, Caroline Harcourt followed with an overview of the conservation status of nocturnal primates, especially those in Africa and Madagascar. Hunting she emphasised is not usually the problem, their secretiveness confounding hunters just as much as primatologists, but forest destruction and fragmentation is, especially for the lemurs in the dwindling forests of Madagascar - THE hot spot of the tropical forests (Russell Mittermeier is writing a book which will explain) and one of the megadiversity countries (Russell Mittermeier has just written a beautiful book which explains). The Atlantic forest is another hot spot (a close second to Madagascar) but it has no nocturnal primates, or if it did it lacked somebody with the perspective of Simon Bearder and Paul Honess to find them. (With less

than 8% of the 1,200,000 km² Atlantic forest left, is it really possible to say with certainty that no primate species has become extinct there in the last 500 years? Thirty years ago there were only two or three primatologists in Brazil, and they were having a very hard time to get anybody to invest in their new perspectives.) Nineteen of the Madagascar lemurs are now threatened, and four considered critically endangered, one of them a dwarf with hairy ears, *Allocebus trichotis*, a golden bamboo lemur, *Hapalemur aureus*, and its relation with a broad nose, *H. simus*, and the golden crowned sifaka, *Propithecus tattersalli* which benefited from Ian Tattersall covering new ground with new perspectives in 1974. Following this background about how little we know of the diversity of primates, how important new perspectives are, what little ground we have covered, and the critical situation in Madagascar, Deborah Curtis discussed a new perspective on the activity patterns of primates - cathemerality, the third activity pattern, being both nocturnal and diurnal, and specifically in the mongoose lemur, *Lemur mongoz*. She was able to relate shifts in activity between day and night more clearly to thermoregulation, and possibly avoidance of predators (less leaf cover for them during the day in the dry season in the deciduous forests where they live), than to food supplies.

Elke Zimmermann then brought us back to new species. Besides giving an excellent talk on diversity and speciation in the nocturnal Malagasy lemurs, she presented, with her co-workers, five excellent posters, one of them describing a new mouse lemur, the golden-brown mouse lemur, *Microcebus ravelobensis*, which was revealed by exhaustive statistical analyses demonstrating differences in their tail and hindfeet. Zimmermann's theme echoed that of Paul Honess and Simon Bearder, emphasising how little we still know of the diversity of lemurs and where they occur. This was exemplified by the rediscovery of *Microcebus myoxinus*, and the recently discovered population of the rare and critically endangered *Allocebus trichotis* (reported in a poster by Nasolo Rakotoarison and Helmut and Elke Zimmermann). Zimmermann argued effectively that it was necessary to "illuminate" species diversity just as much as it is to unearth new species, not just for an understanding of their phylogeny but for their conservation. For the last talk of the morning, Laura Harste discussed her fascinating research on tactile communication in the mouse lemur, *Microcebus murinus* in captivity. She showed that despite being supposedly solitary, groups would spend as much as 80% of their time in tactile proximity; either passive or active - allogrooming or even mutual grooming. Although mixed-sex groups spent more time being tactile during the breeding season, the all-male groups she examined were also very tactile throughout the year. Besides being an important element of the social behaviour of these supposedly solitary primates, Harste argued that further study of this and other species would promise important data concerning the evolution of sociality in primates.

After lunch, Anna Feistner reviewed international efforts to study and protect the Alaotran gentle lemur, *Hapalemur griseus alaotrensis*, of the reed beds of Lac Alaotra in Madagascar. She demonstrated the importance of a multidisciplinary approach, with community education using flagship species to promote the conservation of habitat. She showed that, although not having the charm and impact of a gorilla, treated right the gentle lemur

was taking on this role very effectively, gently encouraged by the Jersey Wildlife Preservation Trust, amongst others. Her talk was followed by Lon Alterman who discussed the mysteries and intricacies of trying to discern how many species of slow loris there are in the Far east, in China, Vietnam and Laos. Two species are accepted as valid but the finding of bones of the wrong size in Laos, too big for *Nycticebus pygmaeus* and too little for *coucang*, indicate a third species, which may or not be *intermedius* described by Dao in 1960 in Vietnam. Although the evidence is strong, backed-up by coat colour and teeth, Alterman was cautious, leaving us with the message that we need more evidence. Paul Honess then provided everybody with something to talk about during the tea break, asking the question on everybody's mind by this time - is taxonomic revision a practical necessity or academic indulgence? He was preaching to the converted, of course, in demonstrating well that once you have decided that biodiversity (species even) is (are) worth preserving, then a knowledge of it and its origins is vital, and not merely a curiosity.

Tea was followed by Caroline Ross presenting her work with Anne Maclarnon, and providing the most elucidatory correlations (or the lack of them), between the occurrence of parking and carrying, as alternative ways of taking care of infants, and reproductive investment. She showed that the primates have taken decisions on their own, with different groups taking up infant carrying independently, and that the ruffed lemurs, *Varecia*, having done so thought it a bad idea and reverted to parking. Ross did not explain what is what about *Varecia* infants that got their mothers fed-up (ruffled?) with carrying them, but showed that parkers tend to be more anti-social, and visit their young less frequently but make up for it by producing more concentrated milk. She discussed correlations of carrying and parking with pre- and post-natal investment by the mother, indicating that pre-natal investment was higher in those that parked, although the causes and effects remained obscure - does high prenatal investment mean you have not the energy to carry them around when they are born, or is it that not having to carry them around means you can increase your pre-natal investment? The day was rounded off with a return to cryptic galagos. Michelle Bayes and Mike Bruford discussed the difficulties of phylogenetic reconstruction in small nocturnal primates, such as the lorises and galagos, due to life history constraints and character convergence, and reported on their research (with Simon Bearder) using molecular genetics (mitochondrial DNA sequencing) to examine the relations between lorises in Africa and Asia.

The posters also provided some fascinating reports. Besides those I have mentioned, Ute Radespiel and Elke Zimmermann reported on their search for the mouse lemur mating system. Males had access to more females when they had a bigger home range, but male monopolisation was found to be unlikely. They concluded that they are promiscuous, but there was no correlation between testis size, male body size and home range size, and the determinants of reproductive success in these animals have yet to be discovered. The incapacity of males to monopolise mating was also reported by Dorothea Wrogermann *et al.* for the lesser mouse lemur, with promiscuity rather polygyny being evident in the captive groups they studied. When using vocalisations as a taxonomic tool it is vital to have an

understanding of variation between populations and correlations of any differences with genetic and morphological characters. This was the subject of a poster by T. Hafen *et al.* studying two wild populations of *Microcebus murinus*. They found a distinct divergence in vocalisations but no corresponding difference in genes or morphology. Their findings provide an interesting perspective on the role of vocalisations, so important for communication in the nocturnal prosimians, which it seems can diverge very rapidly, and obviate the need for caution when using vocalisations in systematic studies. Communication was also the theme of a poster by Christina Buesching and Elke Zimmermann. They examined oestrus advertisement (olfactory and acoustic signalling) in the grey mouse lemur, *M. murinus*. They found individual differences in the "trill" calls they use to be correlated with both age and weight, and argued that mouse lemurs advertise not only the fact that they are in oestrus but their fitness in the context of female competition for males. Gwen Hewitt and Paul Honess produced an interesting poster concerning their studies on the mechanics of calling in prosimians, looking especially at the effects of body weight and breathing rate on the production of fast sequences of calls, important as they argue for the information contained in them. Ecological differences between populations and the use of ecological parameters in taxonomy was the theme of a poster presented by Eileen Off, who studied habitat preference, forest heights used, and grouping patterns in the wide-ranging *Galago senegalensis*.

The meeting was an enormous success, presenting as it did so many exciting new developments in so many research fields for nocturnal primates. It was interesting to note, however, the underlying theme implicit in most of the presentations, explicit in some such as the overview by Caroline Harcourt and the case study by Anna Feistner. The new perspectives were in large part on the increase in our knowledge of primate diversity, new ways to get a grasp on the full diversity of the cryptic and nocturnal prosimians, the speciation processes involved, and, with all that, the power to know what the challenges are with regard to conserving the full diversity of the group. The crypticity of the nocturnal primates for taxonomists comes not only from their nocturnal and cathemeral habits, but also notably the fact that, for many, their geographic ranges are minute (the same for the recently discovered New World primates), and that parameter for a PHVA means that the chances of their extinction are high. Many have expounded the need for a resurgence of taxonomic and zoogeographic studies to understand biodiversity, and the new perspectives of the nocturnal primate researchers are meeting that challenge. The PSGB is most grateful to Paul Honess of Simon Bearder's Nocturnal Primate Research Group for organising the meeting, and of course to the Zoological Society of London for the venue.

Anthony Rylands

Corresponding Member of the PSGB Conservation Working Party
c/o Conservation International do Brasil

NAPIER MEDAL 1997

The 1997 Napier Medal was awarded to Nicola Koyama of Liverpool University for her PhD thesis on reconciliation behaviour in wild Japanese macaques at Arashiyama in Japan. Alan Dixon awarded the medal. He not only congratulated Nicola on her fine thesis, but so ably reminded us of the unique and enduring contribution of both John Napier - our founding President in whose honour and memory the medal has been given - and his wife Prue, who was also a distinguished primatologist. As many of you will know, Prue Napier died last Summer. She had hoped to present the 1997 medal. She did present the one in 1995. It was a splendid experience to have her with us, and one that, given her subsequent death, so many of us will treasure especially.

Hilary O. Box



The 1997 Napier Medal being awarded to Nicola Koyama by Alan Dixon

FUTURE MEETINGS

PSGB 1998 SPRING MEETING

To be held at the Conference Centre, Bristol Zoo Gardens
Clifton, Bristol, UK : 6 April 1998

Organizers: John E. Fa, Ian Redmond & Liz Rogers

Bushmeat Hunting and African Primates

09:30 Registration

Where are we? Chair: I. Redmond

10:00 Eating our Relatives - Ethics, Ecology and Extinction.

Ian Redmond.

10:30 Is Sustainable Hunting At All Possible?

John Robinson.

11:00 Coffee Break

Some examples Chair: J. E. Fa

11:30 Regional Differences and Hunting Pressure on Chimpanzees in Guinea.

Rebecca Ham.

12:00 Market Hunting in Congo

Steve Blake & Liz Rogers.

12:30 The Importance of Bushmeat in the Bonobo Distribution Area, Democratic Republic of Congo.

Jeff Dupain.

13:30 Lunch

Providing Solutions Chair: E. Rogers

14:30 Assessing Impact of Hunting: Lessons from Standardized Line-Transect Censusing : from the Neotropics.

Carlos Peres.

15:00 The Bushmeat Trade and the Demise of Primates in Bioko Island: What are the Alternatives?

John E. Fa, Juan Enrique Garcia Yuste, Ramon Castelo & Jaime Perez del Val.

15:30 WSPA's Campaign to Control The Bushmeat Trade.

Karl Ammann & Jonathan Pearce.

16:00 Tea Break

16:30 What Threat does the Bushmeat Trade Present to Primates and How Can NGO's Help?

Evan Bowen-Jones & Stephanie Pendry.

17:00 Panel Discussion

Contributors:

K. Ammann	Box 35, Nanyuki, Kenya.
S. Blake	Institute of Cell, Animal & Population Biology, King's Buildings, University of Edinburgh, Edinburgh EH9 3JT.
E. Bowen-Jones	Fauna and Flora International, Great Eastern House, Cambridge. ebjino2@compuserve.com
R. Castelo	Asociación Amigos de Doñana, c/ Paraguay, Sevilla, Spain.
J. Dupain	Project Bonobo in Situ, Antwerp Zoological Gardens, Belgium. bonobo@uia.ua.ac.ba
J. Garcia Yuste	CUREF, Bata, Guinea Ecuatorial.
J. E. Fa	Jersey Wildlife Preservation, Trust, Les Augres Manor, Jersey JE3 5BP. fa@jwpt.org
R. Ham	Dept. of Psychology, University of St. Andrews, UK.
J. Pearce	WSPA, 2 Langley Lane, London SW8 1TJ, UK.
S. Pendry	Fauna and Flora International, Great Eastern House, Cambridge.
C. Peres	School of Environmental Sciences, University of East Anglia, Norwich, UK C.Peres@uea.ac.uk
D. Perez del Val	Museo Nacional de Ciencias Naturales, Calle Abascal Madrid, Spain. mcnvlo3@fresno.csi
J. G. Robinson	Wildlife Conservation Society, New York, USA. WildCons@aol.com
I. Redmond	Wildlife Consultant, P.O. Box 308, Bristol BS9 7LQ.
E. Rogers	Institute of Cell, Animal & Population Biology, King's Buildings, University of Edinburgh, Edinburgh EH9 3JT. LROGERS@srv0.bio.ed.ac.uk

N.B. There will also be a second day of meetings on 7 April for proffered papers. Titles to be announced later.

A registration/information desk will be available from 9 am and throughout the day. There will be a book display, information on primate captive care and conservation issues, and a variety of PSGB fund-raising goods for sale. The cost of registration will be £5 for Student PSGB Members, £10 for PSGB Members and Student Non-Members and £20 for Non-Members for the two days of meetings.

PSGB WINTER MEETING 1998

The Winter meeting for this year will be held at the Meeting Rooms of The Zoological Society of London on 2 December, 1998. Papers will be concerned with current contributions of zoos to primate conservation and biology.

Contacts for general information:

Brian Carroll - Bristol Zoo Gardens, Clifton, Bristol BS8 3HA
Tel. 0117-9706176
Hilary Box - Dept of Psychology, University of Reading, Berks, UK
email h.box@reading.ac.uk

BUDONGO FOREST PROJECT UPDATE

Readers will be glad to learn that the Compartment N3 of the Budongo Forest Reserve, Uganda has been designated a Site of Special Scientific Interest in the Forest Department's new Management Plan, which covers the period 1997-2007. This affords it a considerable degree of protection against unwanted intrusions by pitsawyers, hunters and others. It also gives the Budongo Forest Project a special mandate to continue to conduct research in the area of its trail system and the surrounding area of forest.

The Budongo Forest Project welcomes comments on its current activities, which are described on its web site. Typing 'Budongo' into a search engine should bring up the site. Currently in progress we have three chimp studies, one baboon study, two forestry studies and two bird studies.

Enquiries should in the first instance be addressed to Prof. V. Reynolds, Institute of Biological Anthropology, 58 Banbury Rd., Oxford OX2 6QS.

(Editor's note: When I tried a search engine, I found 46 possible sites, but the main one is at <http://units.ox.ac.uk/departments/bioanth/budongo.html>)

UPDATE FROM THE KARISOKE RESEARCH CENTRE, RWANDA : JANUARY 1998

It was with sadness that we "celebrated" the 30th anniversary of the establishment of the Karisoke Research Centre in September 1997. At present we are unable to enter the Volcanoes National Park, the Karisoke Director has been based in Kigali for the past 12 months, and our two expatriate assistants, Ymke Warren and David Greer, left Rwanda at the end of their contracts. Several of our most skilled trackers, including Nemeye Alphonse, were arrested in April and are still in prison waiting for their cases to come to trial, and we were all very sad to lose long-term employee Nshogoza FidSle, killed by Interahamwe at his home on August 12. Our remaining trackers face severe economic hardship as food prices have tripled, many staff members have been robbed of all their personal belongings, and some have abandoned their fields along with their homes.

The year began with us monitoring the gorillas seven days a week. Following four births and one emigration, the three research groups comprised 83 individuals: 8 silverback males, 29 adult females, 7 blackback males, 9 subadults, 10 juveniles and 20 infants. The dynamics within Pablo's group are particularly interesting, as this group consists of 39 individuals, including 16 adult females and 14 infants. Both silverbacks are young (Pablo 23 and Cantsbee 19), and judging from displacements and avoidance, Pablo lost his dominance over Cantsbee in 1996. Individual females show preferences for one or the other male, and group members often form two subgroups rather than a cohesive unit. It is probable that this group will split, a process we hope to witness, particularly as the Group 5 split occurred at a time when researchers had been forced to leave Karisoke in 1993.

The murder of three Spaniards on January 18 resulted in expatriate staff leaving Ruhengeri. Post evacuation, we visited gorillas 21 times in three months by making a 12-hour round trip from Kigali, while the trackers continued their work almost unhindered. In May we started to see fresh trails left by infiltrators in the forest, and the trackers heard exchanges of gunfire between the army and Interahamwe who were trying to establish bases in the park. On June 17 we were obliged to suspend all activities when the situation became too dangerous to continue.

The population living around the park took advantage of the total lack of protection for the park's flora and fauna, and the intensity of illegal activities became extremely worrying. Cattle were grazing in the forest, substantial areas of bamboo were cut, and large quantities of antelope meat were coming out of the park for sale in local markets. In the first half of the year, 673 illegal snares, including five buffalo traps, were removed by Karisoke anti-poaching patrols. Many more snares have been set since the government park staff also suspended patrols in June, thus the likelihood of gorillas becoming snare victims is high. While patrols were still

active we witnessed four casualties of antelope snares (three infants and one adult female gorilla). The infants recovered completely after veterinary intervention; a wire snare cut off the fifth digit of the left hand of an adult female in Group 13. In September, after tourism was reopened at Jomba in the Democratic Republic of Congo, a young gorilla was observed with a serious snare injury. This wound was detected as guides with ICCN (Institut Congolais pour la Conservation de la Nature) are now able to visit three gorilla groups near to Jomba. It is thus a great worry that we are unable to monitor the gorillas for snares.

In early August KRC trackers were able to negotiate access to the park with a local army commander as no infiltrators had been encountered during the preceding military patrols. All three research groups were located, but they initially fled at the approach of the trackers and were clearly traumatized. When observation was possible, Tuck was found with a new baby. We have had no detailed information about the gorillas since, other than occasional reports that the habituated groups are encountered by military patrols. These patrols do not enable us to determine whether the groups are intact or if individuals require veterinary attention. Had any gorillas had been shot, the news would have spread quickly, and so we remain optimistic that there have been no deliberate or accidental killings on the Rwandan side of the Virungas.

Recent reports from the Conservator of the Volcanoes National Park indicate an improvement in the security situation, but we can not predict when it might be possible to start tracking the gorillas again. Meanwhile, the Karisoke staff are on permanent standby, ready to make sporadic excursions into the park whenever they are permitted.

DFGF International has established an emergency support fund for the Karisoke trackers. To contribute or for more information, please email DFGF@mindspring.com.

Liz Williamson, Dian Fossey Gorilla Fund
Director, Karisoke Research Centre, B.P. 1321 Kigali, Rwanda

Animal Welfare
Quarterly Journal SSN 0962-7286

Call for Papers -1998

Since 1992, *Animal Welfare* has established itself as an objective international forum for publication of peer-reviewed papers on all aspects of laboratory, farm, wild, zoo and companion animal welfare. The range of subjects covered by *Animal Welfare* is constantly expanding and changing in response to new legislation, discoveries and technologies (such as genetic engineering and xenotransplantation).

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Animal Welfare considers: original papers (reporting the author(s) own studies); review papers; short communications (of less than 2000 words); technical contributions (reports on practical methods for assessing or improving animal welfare); and letters (on topical welfare issues). It will not include any papers based on work which causes unnecessary pain, distress, suffering or lasting harm.

Editor-in-Chief: James K Kirkwood, UFAW, UK.

Section Editors: Professor B M Spruijt, Utrecht University, Netherlands (farm animals); Dr M Stevenson, Royal Zoological Society of Scotland, UK (zoo and wild animals); Professor M Stamp Hawkins, University of Oxford, UK (ethics and philosophy); Dr D C Turner, Inst of applied Ethology and Animal Psychology, Switzerland (companion animals); Professor J Hau, University of Uppsala, Sweden (laboratory animals); Dr L Keeling, Swedish University of Agricultural Sciences, Sweden (poultry).

Editorial Advisers: Dr R Baker, Dr M F Bouissou, Mr R Ewbank, Dr M Festing, Dr D Fraser, Professor B Hart, Mr C B Hart, Professor D Morton, Dr J Serpell, Professor J Webster, Professor P Wiepkema.

Universities Federation for Animal Welfare

The Old School, Brewhouse Hill, Wheathampstead, Herts AU 8AN, UK
 Tel: 01582 831818 Fax 01582 831414

PRIMATE EYE NEWS

Primate Eye has been soliciting opinions for alterations in its format. One popular suggestion was a section that would be devoted to items that could be loosely described as news. The idea is that this will comprise a list of very short pieces on items of interest to the primate community - which can be anything from the discovery of new species, events in the conservation and zoo worlds, announcements of meetings to acts of heroism. In future issues, this area will be written by the news team (Becky Harrison, Paul Honess and Rob Lee).

NEWS

The Orangutan Foundation (0171-724-2912, redapeuk@aol.com) has just started a special appeal to cover the increased costs associated with the disastrous forest fires that raged through Borneo and Sumatra (as well as other parts of South East Asia) during last autumn. Anyone wishing to help should contact them.

The International Primate Sanctuary of Panama are running a nine week program in primate behaviour and ecology in Panama this summer. Anyone interested should look for further details on the web site <<http://www.sinfo.net/islatigre>>.

A new interdisciplinary journal in primatology was recently created under the auspices of the Societe Francophone de Primatologie (SFDP). The main objectives of the journal, entitled "Primatologie", are to develop contacts between French speaking primatologists from around the world, and to promote the development of primatology in general. The editor is Joel Fagot, ((33) (0)4 91.71 49 38 fagot@Inf.cnrs-mrs.fr) and details are on <<http://Inf.cnrs-mrs.fr/lnc/primatologie.html>>. Papers will be in French with an English summary.

CONFERENCES AND WORKSHOPS

Gibraltar Neanderthal Conference. To celebrate the discovery of the Forbes' Quarry skull, there will be a conference "Gibraltar and the Neanderthals 1848-1998" from 28-30 August, 1998 in Gibraltar. The programme, organised by Chris Stringer, Nick Barton and Clive Finlayson, will cover palaeontological, archaeological and palaeoenvironmental aspects of the Neanderthals, and aims to place the Gibraltar finds in their European and Mediterranean contexts. The programme of speakers has been arranged, but proposals for Poster presentations are welcomed. There will also be associated visits to relevant sites in the region. Contact Dr Clive Finlayson, Director, The Gibraltar Museum, P.O. Box 939, Gibraltar; Tel (350) 74289; Fax (350) 79158; Email jcfinlay@gibnet.gi You may also access full information on the 1998 Gibraltar Neanderthal Conference at the following site: <<http://www.gibraltar.gi/neanderthals>>.

Vertebrate ontogeny and phylogeny: Implications for the study of hominid skeletal evolution. This is a joint meeting of the Centre for Ecology and Evolution (UCL) and The Linnean Society of London to be held at the Meeting Rooms of the Linnean Society, Burlington House, Piccadilly, London, 27 April, 1998 and organised by Paul O'Higgins and Martin Cohn. This meeting will examine the ways in which new insights into the mechanisms and processes underlying ontogeny impact on the interpretation of the fossil evidence of human origins. These insights offer the prospect of understanding the mechanisms underpinning phylogenetic transformation in the skeleton. Speakers will present an overview of the techniques that support their discipline and to relate recent advances in knowledge to current issues in the study of human origins. As such, the meeting will highlight possible directions for future research. For booking and enquiries contact: The Meetings Officer, The Linnean Society of London, Burlington House, Piccadilly London W1V 0LQ; <<http://evolution.anat.ucl.ac.uk/index.html>>.

The International Conference on Social Networks which is the joint 5th European and 18th Sunbelt Conference will be held at the Gran Sitges Hotel in Sitges (near Barcelona), Spain, from Thursday, 28 May through Sunday, 31 May, 1998. On Wednesday, 27 May, the registration will start, and there will be various workshops and social events. The conference provides an interdisciplinary forum for social scientists, mathematicians, computer scientists, ethologists, and all others interested in social networks. Conference sessions allow individuals interested in theory, methods, or applications of social networks to share ideas and common concerns. For information on paper submissions, contact: Program Committee, International Social Network Conference, ICS Grote Rozenstraat 31, 9712 TG, Groningen, The Netherlands fax +31 - 50 - 3636226 email Social.Networks@ppsw.rug.nl and for information on conference registration, contact: Sunbelt XVIII and 5th European international conference on social networks / NAGAR Departament de Sociologia Universitat de Barcelona Diagonal, 690 08034 - Barcelona. Fax: 34 3 2802378; Tel: 34 3 4021804; email: nagar@riscd2.eco.ub.es <<http://www.heinz.cmu.edu/project/INSNA/>>.

Workshop EFP'98 - Diet, foraging behaviour and time-budgets in nonhuman primates: how field studies may help improving the welfare of captive primates? will be held on 16-18 April at the Station Biologique de Paimpont Universiti de Rennes, France. Organisers: Bertrand L. Deputte (chair), Robin Crompton, Annie Gautier-Hion, Nelly Minard; email: deputte@univ-rennes1.fr. The aim of this workshop is to provide the European Commission and the Council of Europe with sound advice to improve the welfare of captive primates in European primate laboratories with special reference to feeding and time-budgets. This workshop will review evidences from field studies about diet, foraging behavior and time budgets in different primate species especially those, or closely related to those, commonly used in laboratory experiments. For more details and request of registration and abstract forms please contact: Workshop EFP'98 - Station Biologique, 35380 Paimpont. France; email: mcquris@univ-rennes1.fr

GAWC-3. Securing Great Ape Survival into the Next Millennium. This will be held in Kuching, Sarawak, Malaysia from 3-6 July, 1998. All topics pertaining to chimpanzee, bonobo, gorilla and orangutan will be considered, however the following topics are suggested for potential presenters: behavioural and/or ecological; conservation, rehabilitation and/or wildlife management; language and/or learning and/or cognition; captive and/or medical management; anatomy and/or physiology. One special session will be devoted to gibbons and siamangs. The conference is being organised by the Orangutan Foundation International and further information can be obtained from OFI by fax (310) 207-1556, email: redape@ns.net or at 822 S. Wesley Ave., Los Angeles, CA 90049 atn.: Dr Gary Shapiro.



MARMOSETS AND Tamarins IN BIOLOGICAL AND BIOMEDICAL RESEARCH

Proceedings of a workshop organised by the European Marmoset Research Group

Editors: Christopher Pryce, Leah Scott, Christian Schnell

Contents: The Callitrichidae: a biological overview (Rylands, Brazil). Housing & Husbandry: Current practice in maintaining marmosets (Hubrecht, UK). Integrating marmoset husbandry and research (Pryce, CH & Samson, UK). Environmental control in good captive callitrichid environments (Buchanan-Smith, UK). Physical environment and its influence on behaviour in captive common marmosets (Dettling, CH). Response to a novel object by socially-housed common marmosets (Vitale, Santamaria & Queyras, Italy). Nutrition & Health: Experimental development of the complete marmoset diet (Thornhill, UK). Comparative summary of nutritional adaptations and needs of callitrichids and application to captive management (Carroll, UK). Veterinary care of callitrichids (Gatesman, Germany). Comparative pathological-clinical aspects of captive callitrichids (Robert, CH & Carroll, UK). Physiology & Behaviour: Callitrichid social biology (Box, UK). Evolutionary and comparative biology and callitrichid research (Pryce, CH). Circadian rhythms in the marmoset (Erkert, Germany). Marmoset vocal communication (Jones, UK). Urinary oestrogen in monitoring and control of reproduction (Nievergelt, CH). Neurotransmission in the common marmoset (Hornung, CH). Applications: Behavioural conditioning in marmosets (Scott, UK). Haemodynamic measurements by telemetry in marmosets (Schnell, CH). Relative merits of the marmoset in toxicological testing (McAnulty, UK). Relative merits of the marmoset as a model in reproductive medicine (Lunn, UK)

Published by DSSD Imagery: Salisbury, United Kingdom (1997)

TO ORDER: Send a cheque or banker's draft payable to the European Marmoset Research Group for £15 (incl. postage & packing) to L. Scott, Biology Division, Medical Countermeasures, CBD Porton Down, DERA, Salisbury, Wiltshire, SP4 0JQ, United Kingdom

PhD ABSTRACTS

Familiarity And Co-operation In Spider Monkeys: Coping With Group Living In Captivity

This study investigates the social potential of captive spider monkeys (*Ateles geoffroyi*), focusing mainly on co-operative behaviours and reciprocal relationships. Data were collected on two groups of *Ateles geoffroyi* at the Centenario Zoo at Merida, Yucatan, Mexico. These two groups had different social backgrounds. One group was a newly formed group which was composed of unfamiliar subjects. The other group was an established group composed of captive born kin-related individuals. Behavioural comparisons between these two groups, allowed the evaluation of the effect of familiarity upon the social structure of this species in captivity.

Despite the flexible nature of Ateline sociality, certain levels of co-operative behaviour are required for this species to behave socially. Spider monkey sociality seems to be particularly susceptible to ecological changes. Captivity removes the ecological constraints that may affect intra-group competition for food resources and predation pressure. Given this, spider monkeys in captivity seem to show stable social networks, similar to the ones found in captive chimpanzees. In this study, spider monkeys were found to possess reciprocal relationships, based upon individual affiliative investments: subjects exchanged affiliative investments for agonistic support. Familiarity was found to exert an important effect upon reciprocity. The dominance rank of the spider monkeys studied were found to depend on the number of agonistic supporters that each subject was able to possess. Also the dominance rank was also found to be affected by familiarity, where the members of the established group had a stronger tendency to maintain a linear hierarchy, compared with the members of the newly formed group whose dominance hierarchy structure was found to be weak.

The effect of relatedness upon co-operation in the established group was also evaluated. Paternity tests were performed to determine the degree of relatedness among the study subjects. The results obtained suggest that only close kin tend to tolerate each other when sharing access to scarce food resources. This seems to suggest that only very strongly bonded dyads, such as mother and offspring, show co-feeding behaviour.

The captive spider monkeys of this study also developed conciliatory mechanisms to mitigate intra-group aggression. Reconciliation, consolation and re-directed aggression were found to occur after conflict. Familiarity was also found to affect the conciliatory tendency of these subjects.

The results of this study indicate that spider monkey sociality is more complex than previously expected. More studies are warranted to explore the social potential of this species if we are to determine the factors shaping their social networks in the wild.

Rosalia Pastor-Nieto
Department of Psychology, University of Liverpool

The Evolution of Reconciliation within the Primate Order

Reconciliation, its nature and the factors driving its evolution within the Primate Order have been the subjects of academic deliberation since the advent of controlled, post-conflict research almost two decades ago. This thesis attempts to draw these thought processes together by using linear regression modelling in a heuristic exercise to tease out the main factors hypothesised as having fuelled the development and refinement of this behaviour through time. It employs the comparative method to control for phylogenetic inertia and uses empirical data from the literature on 21 species of monkeys and apes, from the four major taxonomic groups of nonhuman primates to test current evolutionary theory. A further hypothesis is also proposed (Social Function Hypothesis) which suggests that reconciliation evolved in response to individuals' need to protect and maintain the fiction of their social relationships with other group members. An index which reflects the degree of social function found within groups is developed in order to test this hypothesis. The results of this comparative analysis revealed two significant and robust models in which two continuous variables alone (neocortex size and the index of social function), were found to predict the current distribution of reconciliation within the Primate Order. The first model provided compelling evidence in support of the Social Function Hypothesis and for the Good Relationship Hypothesis (Aureli *et al.*, 1989; de Waal, 1986a), in so far as highly functional relationships can be viewed as having a greater intrinsic value than less functional ones. The second model, whilst still supporting the aforementioned hypotheses, appears to undermine the validity of the Minimum Cognitive Capacity Hypothesis (Gallup, 1982). However, alternative interpretations of the results of this model are discussed which prove compatible with the predictions of this hypothesis.

The second part of this work explores the characteristics of social networks within a captive group of chimpanzees housed at Chester Zoo (N=19 adults and subadults). It develops a number of measures of relationship function based on social grooming and agonistic support and uses these to assess the quality of different social relationships. According to these measures, valuable relationships within the group were identified as those between: kin; males; males and females; low ranking individuals; high ranking individuals; and medium and high ranking individuals. This information was then used to investigate the nature and expression of direct operational reconciliation using a large sample of isolated dyadic conflicts (N=1220). The overall conciliatory tendency for the species varied with the type and level of analysis, as well as with factors such as the presence of oestrous females, conflict intensity, sex and relationship function. Kinship and relationship value were not found to be reliable predictors of reconciliation frequency. The characteristics of initiators, behavioural specificity of first postconflict contacts and the factors influencing latencies to these contacts are also discussed. Lastly, the chimpanzee is used as a model species to provide a proximate test of the main theories on the evolution of reconciliation. The results of this piece of research show that, once again, relationship function provides the most accurate predictor of the frequency distribution of reconciliation among dyads in this model species. These findings are discussed in relation to the

definition and measurement of reconciliation, the evolution of reconciliation and sociality, and the future of post-conflict research.

Julia M. Casperd
Department of Psychology, University of Liverpool

Fruits, foliage and form: the roles of colour vision

Amongst the mammals, trichromatic colour vision is found only in primates. Why might trichromacy have evolved? An important function of colour vision is to draw attention to objects - to mediate visual search by colour, I argue that primate trichromacy evolved for the task of detecting fruit amongst foliage. To test this hypothesis, I measured the reflectance spectra of fruits eaten by three sympatric primate species in French Guiana, *Alouatta seniculus*, *Ateles paniscus* and *Cebus apella* (the former exhibits uniformly trichromatic colour vision and the latter two exhibit a sex-linked polymorphism in colour vision), and also the reflectance spectra of the leaves which form the background. I have developed a method of quantifying natural colour signals in terms appropriate for nonhuman primates. This was used to demonstrate that the forms of trichromatic colour vision found in these three primate species are optimised for the task of detecting fruit amongst foliage, and also to examine whether the differences in colour perception amongst these three species are reflected by differences in the colour signals offered by the fruits they eat.

A further hypothesis is that primate trichromacy coevolved with the reflectance properties of the fruits whose seeds they disseminate. I have examined this hypothesis by asking whether the changing colour signals offered by fruit as they ripen are aimed at primate seed-dispersers. The reflectance spectra of a large number of fruits in various stages of maturity were measured, the edible pulp was weighed, and the seeds were planted. The results demonstrate that, in some plant species at least, the colour signal offered by a fruit is an indicator of the readiness of the seeds to germinate and of the food incentive offered to primate disseminators.

A second perceptual role of colour vision is to impose perceptual organisation on the visual field. I have investigated the relative power of red-green and violet-yellow colour differences to impose perceptual organisation on a regular array of coloured patches, in normal and anomalous trichromacy. The relative organising power of colour differences along these two dimensions of colour space differs amongst normal trichromats. For most, but not all, anomalous trichromats, the relative salience of the red-green axis of colour space is much reduced. The spatial separation of the elements of the array also has a major effect on its perceptual organisation.

Benedict Charles Regan
Department of Experimental Psychology, University of Cambridge

BOOK REVIEWS

Reaching Into Thought: The Minds of the Great Apes
 Edited by A. E. Russon, K. A. Bard, and S. T. Parker.
 Cambridge: Cambridge University Press, pp. 464. 1996.
 ISBN: 0 521 47168. Hardcover: £55.00.

The first time I met the steady gaze of a great ape (she was an eight-year-old chimpanzee called Uska) I remember experiencing an eerie sensation of not just a meeting of our eyes, but a meeting of our minds also. No other type of animal has had that effect on me. I have lived with dogs and cats and I have worked with rhesus macaques, capuchin monkeys and baboons, but only chimpanzees and bonobos (unfortunately I have had little direct experience of orang-utans and gorillas) have struck a resonant cord of kindredness. I am not the only one to be affected thus: Douglas Adams spent three pages in his book *Last Chance to See* trying to describe that sense of having bridged the species barrier after looking into the eyes of a Mountain Gorilla. However, the role of science is to put aside such subjective considerations and seek objective proof. What scientific evidence do we have to support the claim that Great Apes are special among animals in possessing higher mental functions which are similar to our own? This is the intriguing thesis posed by the editors of *Reaching Into Thought (R.I.T.)*. I believe that *R.I.T.* is a highly appropriate acquisition both for experts in the field and the relatively uninitiated alike, since the book very accurately reflects many of the strengths, but also some of the weaknesses inherent in this fascinating area of research.

Fortunately, the strengths are more prevalent than the weaknesses. One of the most refreshing features of the book is in its concerted effort to accurately represent the current knowledge on all four species of Great Ape. Most books or articles on primate higher cognition concentrate almost exclusively on chimpanzees. Although there are six chapters which focus on chimpanzees, there is one on bonobos, two on orang-utans, one on gorillas and eight chapters which compare all of the Great Apes. Thus I think that it is no coincidence that it is the eyes of an orang-utan peering out from the very attractive front cover, rather than a chimpanzee.

Cognitive primatology tends to be a hot spot of scientific creativity and imagination. Many of the chapters in *R.I.T.* are sparkling with new ideas and fresh perspectives. Some of the best of these are: Hart & Karmel's discussion of self-awareness in humans, apes and monkeys with their subtle but important distinctions between objective and subjective self-awareness and understanding the self in terms of personal memories, representations and theories; I have peppered the margins of Taylor-Parker and Russon's chapter on culture and cognition with ticks, stars and exclamation marks. I found their ecological/evolutionary model fascinating, especially their analysis of feeding strategies and their proposed four levels of culture. Yet for me one of the best chapters is Whiten's on imitation,

pretence and mindreading. Whiten's analysis is sophisticated but accessible, and I believe his careful application of Perner's distinction between secondary representations and metarepresentations to the primate literature is a very important contribution to the field.

However, the chapters I enjoyed most were those that not only included ground-breaking theoretical models, but also backed these up with rigorous personal scientific observation and/or experiment. Worthy of special mention are: Visalberghi and Limongelli's chapter in which they make a critical distinction between performance and understanding in tool-use: their empirical exploration of this issue is imaginative, perceptive and intelligent; Boysen's chapter on the functional advantages of the use of abstract symbols in overcoming immediate behavioural limitations is a joyous celebration of how when sensitive, open minded observation is coupled with a creative scientific mind it can lead to important unexpected discoveries; Boesch's chapter on chimpanzee culture is full of detailed observations, careful reasoning, and original ideas.

So far I have pretty much given the book a rave, but I did mention earlier that I thought there were weaknesses. Too many of the contributors seem to be already convinced that Great Apes are special and hence they are not sufficiently sceptical of the evidence they present. There have been some very influential reviews which have challenged the claim that there is anything special about the cognition of Great Apes, or indeed primates in general (e.g., MacPhail 1985, Heyes 1993). If *R.I.T.* is anything to go by, it seems that the reaction of most primatologists to these criticisms is simply to ignore them. As a result, many of the chapters occasionally read a bit like the converted preaching to the converted. If one were to approach the book with a particularly sceptical eye, I fear that after having read it, one would not be very much more convinced of its thesis.

Part of the problem is that the vast majority of chapters are not sufficiently comparative. Great Apes are compared with each other, humans, macaques and cebus. But if we are to gain an impression that Great Apes are truly special among animals, the comparative net must be thrown out much wider. There is a whole industry of research on the cognition of rodents and birds. Heyes (1993) has argued that the only convincing evidence for true imitation comes from budgerigars and rats, not primates. Whiten is the only contributor to treat these challenges with sufficient seriousness to directly compare the primate and non-primate evidence.

The editors acknowledge that there are two gaping holes in the content: brain size and language. The point is well taken that to do justice to the issue of Great Ape intelligence in terms of the brain would require a book in and of itself. However, the case is much weaker for not including a chapter on language or gestural communication. The editors' excuse, that there have been several recent articles and books on the topic of language in Great Apes, does not stand up to scrutiny. There have been more than several books and articles on social learning and culture in recent years, but nevertheless *R.I.T.* contains no less than five chapters almost exclusively dedicated to this topic and a further seven that discuss it conjunction with other topics.

McGrew complains of *R.I.T.* that in the final analysis the species barrier remains in place "they are still them and we are still us". Perhaps such a division is inevitable. After all, Great Apes are not human - as Foley observed, by definition, each specie is unique. However, related to McGrew's point is another possible omission in the book; the issues of personhood, welfare and conservation. Only Hart & Kannel (both child developmentalists rather than primatologists) rather briefly discuss personhood and its relation to animal rights. Despite my few stated reservations, I would still highly recommend *R.I.T.*. In addition to containing some truly wonderful individual articles, taken as a whole, it serves an important role by accurately reflecting the present status of cognitive primatology as it pertains to Great Apes.

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Debbie Custance

Department of Psychology, Goldsmith College, University of London

Reaching Into Thought: The Minds of the Great Apes

Edited by A. E. Russon, K. A. Bard, and S. T. Parker.
 Cambridge: Cambridge University Press, pp. 464. 1996.
 ISBN: 0521-47168-0. Hardcover: \$84.95.

As implied by the engaging title and as specified in the subtitle, this volume focuses on the cognition (in the broadest sense) of the four species of our fellow hominoids: bonobo, chimpanzee, gorilla, and orangutan. It covers that complex of behaviour and process that includes (to varying extents): imitation, social cognition, teaching, self-awareness, and culture, as well as more specific topics like conflict resolution, numeracy, and ostension. More importantly, in this book these topics are usually treated comparatively and synthetically, even when the causal inter-relationships are challenging chicken-and-egg problems.

The backgrounds and viewpoints of the three editors are reflected in the range of contributions offered in the 19 chapters. Comparative and developmental psychology predominates: most of the 25 authors have studied only captive primates, and seven (Aurelli, Bard, Call, de Waal, Gardner, Harper, Tomasello,) come from one research locus, the Yerkes-Emory complex in Atlanta. In contrast, only five (Boesch, Byrne, Ingmanson, Whiten, Yamakoshi,) of the 25 primarily study wild primates,

and the lack of up-to-date ecological underpinning is sometimes all too evident, especially in those authors who have not studied apes at all (Hart, Karmell, Langer, Mitchell). Luckily, several key contributors have extensive, bridging knowledge of both captive and free-ranging primates (Anderson, Bard, Matsuzawa, Russen, Whiten). The editors bracket the contents, which are split into halves on the scope and organisation of great ape intelligence, with admirably synthetic opening and closing chapters.

Instead of trying to cover the anthology chapter-by-chapter (which usually results in a string of potted abstracts), this review seeks to highlight key points and topics. The most comprehensive chapters if one wants an overall sense of the book are those by Whiten and by Taylor. Whiten genuinely tries to find common cognitive ground for imitation, pretence and "mindreading" and is the only contributor to make any attempt to introduce non-primate material into the mix. Taylor provides an overarching umbrella in the form of apprenticeship in tool-mediated extractive foraging; this is challenging since only chimpanzees among the apes actually show this to any extent in nature. She is also the only contributor to develop the functional side of cognition, whether by grappling with operational definitions or by hypothesising evolutionary pathways.

The coverage of apes largely reflects our present state of knowledge: Chimpanzees take precedence, with Boesch reprising three routes to assess culture in chimpanzees (ecological, transmission mechanisms, innovation), and Matsuzawa providing an ethnographic account of the material cultures of neighbouring populations in Guinea, Bossou versus Nimba. Material culture is also the topic of Ingmanson's report in the only chapter devoted to bonobos; at least at Wamba, they use no tools as weapons nor in foraging, but objects do act as rain shelters, play starters, and display enhancers. The only chapter on gorillas, by Byrne, is a gem. With provocative and original reconsideration, he advances the cause of the underrated, misunderstood ape and ranges from techniques in food processing to the importance of absolute brain size. The two chapters devoted to orangutans are a contrast: Miles *et al.* present qualitative findings on induced imitation in a single, immature, home-raised subject (Chantek). Russon gives a exemplary account of how to study imitation in free-ranging individuals, that is, rehabilitated Bornean orangutans spontaneously (and sometimes amazingly) copying humans. Anyone who thinks that a complex process can be studied only in the controlled confines of the laboratory should dwell on Russon's chapter.

The prevailing comparative framework in the book is human versus ape versus monkey, with the question often being to which extreme is the one in the middle (ape) most closely related. Unfortunately, these are gross categories. Only Parker and Russon deal with other-than-living *Homo sapiens*, thus leaving almost nothing otherwise said about ancestral hominoids. Here, monkeys really means New World capuchins (*Cebus* spp.) or Old World macaques (*Macaca* spp.), and these are usually lumped, thus belying notable differences between them. However, two paired chapters, by Anderson and by Visalberghi and Limongelli, accurately reflect the current uncertainty over *Cebus apella* intelligence: Do they possess comprehension of causality (like apes) or not (like other primates)? Finally,

it is worth noting that the lesser apes (gibbons) are ignored altogether, though they would be an obvious intermediate point in the phylogenetic continuum. It may be that not enough is yet known and so the book will act to stimulate much needed research on the Hylobatidae.

If there is a single pervasive theme to the book, it is enculturation. Most of what we know about the minds of apes comes from individuals whose lives have been heavily impacted by humans, most notably through confinement and deprivation to varying degrees. Thus, we seek to fathom the adapted mental capacities of organisms by studying them in nonadaptive, even maladaptive, circumstances. Frustratingly, ideas about enculturation vary markedly: for some it means human rearing (Russon & Bard, Gomez, Whiten) especially in enriched, responsive environments (Anderson). For others, apes can be enculturated in either human or ape settings (Bard & Gardner), or it must be an intraspecific process (only apes can enculturate apes) but only across generations (Parker & Russon). For some, enculturation is just the biosocial process whereby an organism gains experience in a linguistic (= human) and cultural contexts (Miles *et al.*), while for others the natural process is totally disrupted by captive conditions (Boesch). By now, the reader may be confused, as some of the above sounds like socialisation (as in psychology) or acculturation (as in anthropology).

What is more important are the effects on apes of being influenced by humans, e.g. the actual creation of new cognitive abilities (Bard & Gardner). Call and Tomasello's chapter espouses this most strongly: being treated intentionally by humans causes fundamental changes in ape cognition across the board, they say. Essentially their claim is that human influences raise the apes' minds to otherwise unattainable (= human-like) levels. It is (only?) these super-apes, they say, that are capable of imitative learning or intentional communication, and some capacities such as teaching or cooperation are likely to be unattainable by any ape in any setting. The former smacks of a sort of phyletic colonialism (they need to be civilised to be worthy) and the latter is a limb that too many primatologists have ventured on to only to have it sawn off by their subjects of study. Individual apes like Joni (Kohts), Gua (Kelloggs), Viki (Hayeses), etc. to present-day Koko and Kanzi may be wonderful performers, but they would not survive more than a few days in nature, in competition with their rustic, uncouth counterparts.

Overall, the book taps all the right channels of current interest, and when it appears in a more affordable paperback, every evolutionary cognitive science should buy it and maybe teach a seminar using it. But ironically, in the final analysis, they are still them and we are still us: although the book's dedication is fulsome in its acknowledgement to the apes, the book's index will not allow the reader to access a single chimpanzee by name (so, no entry for Washoe, Fifi, etc.) and even Chantek, Kanzi and Koko appear only as subentries. There are limits...

W. C. McGrew
Miami University (Ohio), U.S.A.

Into Africa

Craig Packer. University of Chicago Press, 1995.

Paperback, 285 pp, with colour and black and white illustrations.

This book chronicles a journey made in 1991 by the author during which he studied lions, weighed chimpanzees and trained students. However its focus is neither travel, animal behavior, nor vocational skills. Instead, it is more of a memoir, with vivid recollections from the author's venerable history of research and travel. I found it to be very engrossing reading, although the sense that it was no particular sort of book left me vaguely dissatisfied. But it is extremely realistic and entertaining.

The book is constructed as a diary of a journey made to the Serengeti and Gombe National Parks in Tanzania in the company of students and field assistants. Instead of chapters, it has journal entries which form the loose infrastructure upon which reminiscences and scientific observations are hung. It is arranged chronologically, and by destination. The story of this trip starts in Minneapolis Airport, goes through London, Nairobi, Arusha, the Serengeti, Ngorongoro, back to Arusha, Dar-es-Salaam, Gombe, Kigoma, Dar again, Mto-wa-Mbu, and then the return to the savannah: Ngorongoro, Serengeti, and then home via Nairobi and London. And all this in 52 days. Whew. I was glad I did not have to arrange this man's itinerary.

With all that travel, it is a minor miracle there was any time for research, much less the training of students, intestinal complaints, reconciling of enemies, smoothing over of social bumps and motor vehicle repairs which are inevitable in a journey of this type. Not only are the lions, baboons and chimps studied, there is also a large amount of interesting ethological literature and theory thrown in for our edification. That and some song lyrics, to supply the proper mood.

The three portions of the trip, to the Serengeti, Gombe and a return to the Serengeti, are grouped under the respective headings of Lion Eyes, Dark Star, and Red Rover. I found the first section, which dealt with the long-term lion research in the Serengeti ecosystem, to be the most informative and lucid. The day-to-day tracking of the lions is interspersed with anecdotes about the running of the camp and the interactions of the various researchers and students, all of which is very readable. Activities observed (lion, not human) are put in the perspective of relevant theoretical issues about social behavior, although the discussions of altruism could just as easily be applied to the humans doing the research.

The second part of the book describes travel to the Gombe National Park, and relies upon Packer's recollections about the 1975 kidnapping of foreign research students which lead to their eviction from the park to provide narrative drive. The current visit provides the author with a Proustian reminders of people and events surrounding the kidnapping, details of which are then told throughout the section. This is both interesting and effective but somewhat beside the point. The research of Jane Goodall and her group is also summarized, and numerous episodes of chimpanzee and baboon behavior wonderfully described.

The final section returns us to the Serengeti, where in addition to the lion research, which is now more in the hands of the students and colleagues, is concerned with a modelling workshop to create a computer simulation of the ecosystem. The author also effectively transmits something of the exhaustion he must have felt at the end of a rather frantic field trip. All of the sections convey the mood of the place and people very well, and the individual stories are interesting and appropriate.

Anyone who reads this book cannot fail to learn some interesting details of animal behavior, particularly about lions. There are many sections which deal, almost as asides in the journey chronicled, with current issues in research on cooperation in social animals, a field in which the author and Anne Pusey have published numerous scholarly articles. In this popular book the author gives a highly personal, amusing and informative account of animals in the wild, and the adventures and trials which befall the humans lucky enough to be involved with the activity of studying them. I was not amused by a number of deprecating stories and remarks which centred on the bad conduct of a number of Africans encountered during past and present journeys. To be fair, however, there were also anecdotes which showed the author's affection and admiration for people he met along the way.

The layout of the book is suitable for its structure as a travel journal, with maps of the regions and photographs delineating the sections. There is a section of colour photographs included, and they provide some atmosphere although the printing quality is uneven. The page size and format is very like a introductory textbook rather than a trade paperback, which was a bit unusual. This paperback version is provided with a new postscript by the author, in which is told the disturbing story of the lion population's devastation by canine distemper virus subsequent to the story. This short tale of the crisis and the response of the Tanzanian Government and wildlife researchers is an edifying and pertinent close to the book.

I took this book with me on my own two month long research trip to Africa, but found I could not read it there where the author's perceptions were an unwelcome intrusion on my own. Upon my return home I devoured it very quickly. It is a interesting, fast read which, despite some caveats, can be recommended to all readers interested in a personal account of travel, animal and human behavior in Africa.

L.C. Bishop
Dept of Human Anatomy and Cell Biology, The University of Liverpool

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