

EDITORIAL

Primatology can be a lonely, seemingly thankless calling. Countless hours in the field with few amenities, or slaving over a hot word processor to churn out papers or grant proposals; at times, it can seem that there is little hope of appreciation or even acknowledgement of the effort we regularly put forth.

So, it is with no small amount of pride that we announce that a member of the Society's Conservation Working Party, Ian Redmond, has been awarded an OBE (see announcement in this issue). Although the positive effects on the wild populations of our closest relatives are the most important results that conservation efforts produce, it is nice to know that recognition, and even Honours, may result from such work, as well.

As the summer comes to a close and many of our members return from their study sites, we begin to look forward to the Winter Meeting of the PSGB. This year marks a drastic break with tradition; for the first time, we will be holding the meeting outside London. Mike Bruford and Leslie Knapp have organised a fascinating and topical symposium entitled *Primate Conservation Genetics: Current strategies and future prospects*, to be held in Cambridge on 5 December 2006. The schedule and abstracts are included in this issue. We hope that the change in venue will revitalise proceedings and we encourage everyone to attend.

Keeping with the topic of change, we would like to announce some new post-holders in PSGB Council. Taking over (from me) as Information Officer is Caroline Ross, Geoff Hosey is now convening the Captive Care Working Group, and Sarah Vick has accepted the mantle of WebMaster. Watch the website <www.psgb.org> for further new developments, including the imminent introduction of the PSGB on-line shop (more on this in the next issue).

The articles and abstracts included in *Primate Eye* are not for citation or quotation without permission of the authors. The deadline for the next issue of *Primate Eye* is 15 January 2007. Items (manuscript or electronic in any standard format) for future issues should be sent to:

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PSGB correspondence unrelated to *Primate Eye* should be addressed to the Hon. Secretary. Notification of change of address should be sent to the Membership Secretary.

The PSGB WebSite can be found at <www.psgb.org>.

Ian Redmond OBE

The PSGB is pleased to report that Ian Redmond, tireless campaigner for primate conservation, has been awarded an OBE in the Queen's Birthday Honours list this year.

As Chairman of the Ape Alliance and chief consultant for the United Nation's Great Ape Survival Project (GRASP), Ian has been at the forefront of ape protection for decades. GRASP has championed the Kinshasa Declaration on Great Apes, now signed by nearly all great ape range countries. In addition to working on preserving wild apes and their habitats, he has also spearheaded campaigns to stop the use of apes in advertising, challenging such multinational corporations as Pepsi and Puma.

A staunch supporter of the PSGB, he is a member of the Society's Conservation Working Party. It was through his efforts that a matching funds scheme between the CWP and the Born Free Foundation was created, grants from which have supported primate conservation research in several primate habitat countries.

He is not afraid to put his body on the line for the cause, either; in 2004, he ran the London Marathon to raise money for the Ape Alliance and the ape projects supported by Born Free, carrying a "Save the Apes" placard the entire distance. His effort raised thousands of pounds to help his beloved hominoids.

Like many in conservation, Ian has found aspects of the work difficult. For example, it was he who discovered the mutilated body of Dian Fossey's favourite gorilla Digit. His elevation to OBE is a welcome acknowledgment of his endeavours. He is quoted on the Cabinet Office honours website, saying, "A lot of conservation seems to be involving banging your head against a brick wall so it's gratifying to get some recognition." The PSGB is proud to offer its congratulations, as well.

Ian Redmond's forthcoming book is entitled *Digit and the Gorillas of Rwanda*, published by Jonathan Cape (expected December 2006). We will supply a link on the PSGB website to allow you to buy the book from Amazon.co.uk; the Society receives a donation for every book ordered this way. Please see the website for more details <www.psgb.org>.

Annual General Meeting of the Primate Society of Great Britain

To be held at 12h30 on 5 December 2006
in the West Road Concert Hall, University of Cambridge

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) PSGB Ethical Statement
- 9) Any other business

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Minutes of the Annual General Meeting of the Primate Society of Great Britain

held at 12h30 on Friday, 9 December 2005, in the Flett Lecture Theatre, Natural History Museum, London.

1. Minutes of the previous meeting:

The minutes were accepted and signed by the President.

2. Matters arising:

There were no matters arising.

3. President's Report:

The Society continued to make steady progress on several fronts this year. We were able to maintain a good level of grant support for conservation and captive care projects, making grants totalling over three-and-a-half thousand pounds (see Treasurer's report for details). There were two excellent conferences: the Winter Meeting on human-primate interactions, organized by Kate Hill and Caroline Ross, and the Spring Meeting, organized by Colleen Schaffner. The quality of the organization, the academic content and the presentations have been really excellent. We bagged several star speakers, including a brace of flying Dutchmen - Carel van Schaik (the Osman Hill medallist) and Frans de Waal (at the Spring conference). I think we can be well satisfied that the excellence of our conferences reflects the current vigour of primatology in the UK. An executive committee has been formed for the IPS 2008 congress in Edinburgh and several meetings held to lay the groundwork (see report below).

The first European Federation for Primatology (EFP) congress was held in Goettingen between 9-12 August. In general, this was a very successful multi-session programme, and well attended - except by PSGB members! Some people cited "conference fatigue" as a reason for not attending. Since this congress is now the main and most visible activity of EFP, the implications of a future lack of PSGB support for it, in particular for the level of subscription we are paying, may need to be considered by Council. On the other hand, we are now in an

excellent position to monitor the way that EFP spends its money, as I succeeded in getting Russell Hill elected EFP Treasurer (he was playing football at the time)! Congratulations to Yvan Russell, who went on from his success as best student speaker at Chester to also win the prize for best student talk at EFP. It's nice to know that we can spot talent when we see it! The idea that had been mooted that the presidency of EFP should pass to the President of the host society every two years was finally rejected following objections from PSGB. Instead, the new President is Carel van Schaik.

Several current and former officers and Council members are to be congratulated on securing new posts: Bill Sellers at Manchester, Russell Hill at Durham, Phyllis Lee at Stirling, and Paul Honess at Oxford. With all these people and others in posts, and a cohort of excellent postgraduates and postdocs, primatology in the UK is in the best state that I can remember.

Finally, as this is my last report as President, I'd like to thank several people for making my job very easy. John Lycett and Russell Hill have been outstanding as Secretary and Treasurer respectively. John, my steely enforcer, has served as Secretary for six years, and, like me, is retiring this year. He has been a constant guiding hand keeping me on the rails. Russell has been a superbly effective Membership Secretary and, latterly, Treasurer, during a period when several changes have been made to subscriptions, grants, and record keeping, and he has been instrumental in modernising us. Thanks also to Paul Honess for his hard work in securing and pushing forward arrangements for the IPS in 2008, and to Bill Sellers for his continuing excellent editing of *Primate Eye* and for his work in modernising the PSGB website. Finally, I'd like to thank all the people who have served on Council so enthusiastically during the last four years, and made Council meetings something I looked forward to, and to the convenors and other members of our working parties which continue to do such valuable work.

Robert Barton
President

4. Honorary Secretary's Report:

Since the last AGM, the Council of the Society has met three times.

Membership of the Society stood at 304 at the end of October, which is down on what I reported last year. Although membership is down, we believe that the current membership is the true minimum following the inevitable disruption that accompanied last year's increase in subscription dues. Overall, membership of the society remains healthy.

187 full members
25 associate
80 student
7 institutional
5 honorary

In addition, the Society sends out seven copies of *Primate Eye* to copyright libraries, and has thirteen subscriptions through agencies.

As usual, the Society has hosted two highly successful and well attended meetings: last December Caroline Ross and Kate Hill organized the annual Winter Meeting at the London Zoo, while Colleen Schaffner hosted the Spring Meeting at The University of Chester. We're all particularly pleased to see year by year improvement in both the organization of meetings, and the quality of the presentations. And, on behalf of the Society, I'd like to express the thanks of the Society to everyone involved in organising and facilitating conferences, both within and outside of council. The Spring Meeting next year will be held in Stirling, and details of that can be found on the Society web page, and will also be published in the January edition of *Primate Eye*.

On the matter of meetings, I have received from Paul Honess a progress report on preparations for the 22nd IPS meeting to be hosted by the PSGB in Edinburgh in 2008. While the full report will appear on the website, I will summarise the main points here:

The meeting will be held from 3-7 August 2008 at the Edinburgh International Conference centre. The Council of PSGB has set up an executive organising committee, consisting of Hannah Buchanan-Smith, Phyllis Lee, Ann MacLarnon, Bill Sellers, and headed by Paul Honess, all of whom have considerable and valuable experience in organising international conferences.

The IPS executive committee has met three times since it was formed, and has made significant progress. One of their first tasks was to appoint a professional conference organiser, which they have done (a company called Meeting Makers). While there is a cost element to hiring a PCO, this is offset by the experience and professionalism that they bring, notably with respect to attracting sponsors and exhibitors and driving hard bargains with local suppliers.

The PCO is currently steering us through the process of setting up the financial vehicle for the congress. By the end of this year, the contract with the Edinburgh International Conference Centre will have been signed, while arrangements for reasonably priced university accommodation are in place. Between 850-1200 delegates are expected to attend the meeting.

The New Year will see the start of fund raising for the congress, and all suggestions for commercial sponsorship and grant sources will be very welcome, especially if they come with a personal contact. As will, presumably, a giant cheque if anyone has cash to burn. The primary aim is to produce a congress with unrivalled scientific quality and interest, while, simultaneously, keeping costs down and hence registration numbers up.

Stephen Nash has kindly agreed to provide artwork for publicity and conference materials. The congress website will hopefully be up and

running in time for the IPS meeting in Uganda next year, at which the Edinburgh 2008 meeting will be actively promoted.

On behalf of all of us I very much thank Paul, Hannah, Phyllis, Ann and Bill for their considerable efforts in getting the IPS 2008 meeting off to such a good start.

Within Council there is the annual departure of elected members who have completed their terms of office. This year Kate Arnold, Todd Rae and Stuart Semple are leaving. Thank you to each of them for the contributions that they have made. In addition, Klaus Zuberbuhler has resigned his position.

Rob has also finished his term of office, and on behalf of all of us, I would like to thank him very much for his leadership over the past four years. He has been incredibly involved in all aspects of the Society's activities, and has been instrumental in new initiatives. I think we can safely say that he's leaving the Society in an even stronger position than it was when he took up the Presidency, so thank you very much.

And finally, and not before time, this AGM is my final duty as Honorary Secretary of the Society, and I'd like to take the opportunity to thank everyone whom I've ever called on for all the help and support they've given over the years which has made my job that much easier. The list is too long to mention everyone; I would, however, like to single out the two Presidents and the two Treasurers that I have served with (respectively, Phyllis Lee and Rob, and Charlie Evans and Russell). Thank you all very much.

John Lycett
Hon. Secretary

5. Treasurer's Report:

Despite the reduction in membership levels following the increase in membership rates last October, the past year has seen a significant improvement in the finances of PSGB. Income has doubled relative to 2003/4, although much of this increase is due to processing the registration fees for the Easter conference at Chester (amounting to £6180). Nevertheless, the Society has reversed the losses of the past few years and has an operating profit of £7342 for the past financial year, with our financial assets increasing to £21808. The financial situation is not quite as healthy as this situation suggests, however, since much of the dramatic increase in donations to the Society is resulting from standing orders at the old membership rate that have not been cancelled. PSGB is unable to cancel these payments into our accounts and all members should check their bank statements to ensure that old banker's orders have ceased. Where refunds are required, individuals should contact me at <treasurer@psgb.org>.

Discounting these old payments, the Society's finances are nevertheless in a healthy state and we are still assessing our eligibility and the feasibility of Gift Aid as a further source of revenue. An important development, however, is that all payments can now be precisely accounted so that, for example, we can ensure that donations fund the areas of the Society for which they were intended. This has been particularly useful in channelling money directly into our Conservation

and Captive Care Grants. Overall, therefore, the Society is in good financial shape and we can look forward with confidence to meeting the challenges in the years ahead.

Russell Hill
Treasurer, PSGB

6. Working Party Reports:

Conservation Working Party Report to AGM December 2005

The CWP members met in London in April and October this year to consider the grant applications submitted by the deadlines of 28 February and 31 August, respectively. In addition to the grants of up to £750 from PSGB, we were also able to award two grants of £500 each as a result of our collaboration with the Born Free Foundation.

We considered a total of sixteen grant applications over the two application rounds and supported six of these as follows:

Karla Biebouw - *Pilot study on the conservation status of the hairy-eared dwarf lemur (Allocebus trichotis) in eastern Madagascar.*

Gail Campbell-Smith - *Bittersweet knowledge: Can people and orangutans live in harmony?*

Valerie Marchal - *Perceived damage of crop-raiding by orangutans.*

Carla Possamai - *Habitat use and behaviour of two groups of northern muriquis in an Atlantic Forest fragment.*

Janna Rist - *Primate conservation and bushmeat hunting in Rio Muni, Equatorial Guinea.*

Graham Wallace - *Surveys, identification and behavioural observations of galagos in Tanzania and Malawi.*

The grants from BFF supported the projects of Carla Possamai and Janna Rist. In addition, an improved 2004 submission from Nguyen Manh Ha entitled 'Survey for white-cheeked crested gibbon (*Nomascus leucogenys*) in Dak Rong Nature Reserve, Vietnam' was also funded by the Born Free Foundation and then, kindly, topped up to the amount requested by Ape Alliance.

The awards from BFF are aimed at range state nationals working in the field on endangered primates or on human-wildlife conflict resolution and we would encourage more applications of this kind.

In addition to considering the grant applications, CWP members reported and discussed several items of conservation interest, including the Kinshasa Declaration on Great Apes, concerns about activities in some zoos and publicity material from IPPL-UK about primates exploited for entertainment. We also discussed which primate sanctuary, in a habitat country, should be selected to be supported by the money collected at PSGB meetings or

through donations from members. IPPL-UK has agreed to also provide some matching funding to our selected sanctuary.

Several reports from previous conservation grant recipients have been received, and there are now only a few outstanding. Abstracts from submitted reports will shortly be available on the website and have been, or will be, published in *Primate Eye*. We were also very pleased to hear from Trevor Jones (who was awarded a grant in 2003) that during his survey of the endangered primates of the Udzungwa Mountains, a new species of mangabey, *Lophocebus kipunji*, was discovered there. Details of this were published in *Science* in May this year and also reported in *Primate Eye*.

I'd like to thank all the CWP members for their work during 2005. We look forward to more excellent applications next year.

Caroline Harcourt, Convenor

Captive Care Working Party Report to AGM 2005

There was no report from the Captive Care Working Party.

7. Election of Council members:

Council's nominations to fill elected positions on Council are:

Dr Geoff Hosey
Dr Tessa Smith
Dr Andrew Smith

There were no other nominations from the floor. Paul Honess proposed the election of Council's nominees, and Russell Hill seconded the proposal. The meeting unanimously agreed to elect them

8. Election and Re-election of officers:

- a) Council nominated Dr Ann MacLarnon to be elected as President and Dr Colleen Schaffner as Honorary Secretary. Paul Honess proposed and Caroline Ross seconded the nomination. The meeting unanimously agreed to elect Ann MacLarnon and Colleen Schaffner.
- b) Council nominated Dr Russell Hill to be re-elected as Treasurer. Caroline Ross proposed and Paul Honess seconded the nomination. The meeting unanimously agreed to re-elect Russell Hill.

There were no other nominations from members of the society.

9. Any other business:

There was no other business, and the meeting was closed.

PSGB Accounts
Year ended 30th September 2005

	2004/5	2003/4	2002/3
	£	£	£
INCOME			
Subscriptions	8146	5991	5616
Donations	5184	826	1884
Meeting Income	7945	1306	2267
Advertising	150	150	150
Other income	5	500	345
Interest (inc investments)	1271*	277*	8
Total Income	22701	9050	10270
EXPENDITURE			
Meetings	7915	1555	2422
Student speaker grants	80	488	476
Council expenses	987	992	847
Bank charges	114	38	57
Grants	3607	4360	2592
Primate Eye	2253	2375	3194
Web resources	0	204	116
Accountancy	59	0	735
Advertising	0	0	56
Other expenses	344	405	374
Total Expenditure	15359	10417	10889
Profit/Deficit	7342	-1367	-619
Bank Balances at 30 September			
NatWest	5174	2996	4621
Cooperative Bank	4460	512	532
Ethical Investment	12174	10964	10688
Total Assets	21808	14472	15841

Income	£	Expenditure	£
Membership Fees	8146.00	Primate Eye	2253.41
Advertising	150.00	Winter Meeting Expenses	2230.82
Winter Meeting Income	1764.50	Easter Meeting Expenses	5684.39
Easter Meeting Income	6180.90	Council Expenses	987.34
Other Income	5.00	Student Speakers	80.00
Interest	61.00	Conservation Grants	2517.00
General Donations	3525.00	Captive Care	1090.00
Conservation Donations	1540.00	Web Resources	0.00
Captive Care Donations	64.50	Other Charges	343.78
Habitat Country Donations	54.50	Accountancy	58.75
Meetings Donations	0.00	Advertising	0.00
Investment	1210.00	Bank fess	113.66
Totals	22701.40		15359.15

Dr Russell Hill
Treasurer, PSGB

PSGB Winter Meeting 2006

Primate Conservation Genetics: Current strategies and future prospects

The Winter Meeting of the Primate Society of Great Britain will be on Primate Conservation Genetics and will take place in the West Road Concert Hall at the University of Cambridge from 9:00 – 19:00 on 5 December 2006. This will be a unique opportunity to hear about current exciting research on molecular genetic studies of great apes, Old and New World monkeys and strepsirrhines. Posters on topics related to Primate Conservation Genetics are welcome (see below for details). Registration at the door (PSGB student members: £10; student non-members: £15; PSGB members: £15; non-members: £25). The meeting is organised by Prof. Mike Bruford <brufordmw@cardiff.ac.uk> and Dr Leslie Knapp <lak26@cam.ac.uk>, who can be contacted for further information.

Programme

9:00-9:45 Registration

9:50 Welcome and Introduction

Session 1: Genetics, Behaviour and Diversity

10:00 **Mike Bruford, Cardiff University.** The application of molecular genetics to the conservation of primates: does it matter?

10:30 **Brenda Bradley, University of Cambridge.** Conservation genetics of an elusive primate: Studying and protecting wild gorillas through noninvasive DNA analyses

11:30 **Michael Kruetzen, University of Zurich.** Challenges in the reintroduction of cultural primate species: the role of genetics and social learning

12:00 **Gillian Olivieri, TiHo, Hannover.** Genetic diversity of mouse lemurs (*Microcebus* spp.)

12:30 Primate Society AGM and lunch

Session 2: Conservation of Genetic Variation

14:00 **Leslie Knapp, University of Cambridge.** Major histocompatibility complex gene diversity: implications for primate conservation

14:30 **Nick Mundy, University of Cambridge.** Polymorphic colour vision in New World primates: causes and consequences for conservation

15:00 **Todd Disotell, New York University.** Primate phylogenomics and conservation

Session 3: The Future of Conservation Genetics Research

16:00 **Ann-Charlotte Rönn, Uppsala University.** Whole Genome Amplification and the use of DNA phylochips for the identification of primate products.

16:30 **E. Jean Wickings, CIRMF.** Primate Conservation Genetics in a Central African context.

17:00 Summary and closing remarks

17:15 Poster Session and Reception

Conference Abstracts

The application of molecular genetics to the conservation of primates: does it matter?

Mike Bruford

School of Biosciences, Cardiff University

Primates are disappearing fast and scientists who study aspects of their biology not obviously concerned with their conservation could rightly be accused of 'fiddling while Rome burns'. However, if an understanding of their basic biology is integral to making the correct choices when it comes to the drastic conservation measures likely to be required in the near future, then perhaps accumulating such basic knowledge will be cost-effective in the long run. Nowhere is this debate as stark as in genetic studies, which interlink with individual behaviour, reproductive patterns and social structure, population genetic diversity and demographic history, phylogeography and phylogenetics. With the combined use of high precision neutral genetic markers and approaches to studying DNA sequences linked to behaviour and adaptation, DNA analysis in primate conservation is entering a new era, going beyond simple characterisation and towards real integrative tools which permits conservation-relevant hypotheses to be tested. Much of these advances will be touched on today, and I will start by highlighting the combination of individual molecular genotype data and genealogical modelling as a tool to understand the past, present and future evolution of primate populations under increasing environmental and anthropogenic pressure.

Conservation genetics of an elusive primate: Studying and protecting wild gorillas through noninvasive DNA analyses

Brenda Bradley

Department of Zoology, University of Cambridge

Molecular analysis can be a powerful tool for studying and protecting primate populations that are difficult to monitor through direct observation. Using examples from our research on unhabituated wild western gorillas, this talk will highlight ways in which molecular ecology can aid efforts to study and protect elusive primates. Employing the same molecular methods used in human forensic and paternity analyses, we examined DNA from faeces and shed hairs found at the nesting sites of wild gorillas in the Central African Republic and Republic of Congo. By identifying individuals at nesting sites we found that nest counts - the primary means of censusing wild gorilla populations - often provide an inaccurate picture of gorilla group size and composition, which has important implications for current population estimates. Examining the genetic relationships among adults within and between these groups provided insights into gorilla mating and dispersal patterns. As these are key determinants of disease transmission routes, understanding these social features is of great importance for conserving species like gorillas for which disease is a primary threat. Ultimately, as technological advances continue to increase the scope of conservation genetics, noninvasive samples may soon provide information, not only on population structure, but also on adaptive variation in wild primate populations.

Challenges in the reintroduction of cultural primate species: the role of genetics and social learning

Michael Krutzen

Anthropology Institute, University of Zurich.

There is considerable geographic variation in basic ecological skills, such as food choice and food processing techniques, within primate species. Many of these skills require extensive learning and social inputs from conspecifics. At least for some of the techniques, there appears to be a degree of local adaptation based on innovations and maintained by social transmission on top of developmentally buffered skills with a strong genetic component. For orang-utans, socially learned influences on the choice of food are considerable. As highly plastic developers and given enough time, orang-utans should be able to invent locally adaptive skills when faced with novel environmental challenges. For this presentation, I will review the genetic diversity among orang-utans, and argue that apart from the genetic background, knowledge about existing local adaptations might play a significant role in successful reintroductions of cultural species.

Genetic diversity of mouse lemurs (*Microcebus* spp.)

Gillian Olivieri (and V. Sousa V., L. Chikhi L and U. Radespiel)

Tierärztliche Hochschule, University of Hannover.

Recent studies have revealed a previously unknown diversity in lemur species. As a consequence, the distribution of each species is smaller than previously thought and the assessments of endangerment need to be revised. Moreover, the habitat of many species is rapidly decreasing and being fragmented. In order to assess these ancient (e.g. speciation) and recent (e.g. anthropogenic fragmentation) processes of differentiation in the smallest and fastest reproducing primate genus, we visited 15 forest fragments in northwestern Madagascar. We captured between four and 59 individuals of the genus *Microcebus* per site. Tissue samples and morphometric measures were taken, population density and forest fragment sizes were estimated. The sequences of three mitochondrial loci (1350 bp) were used to clarify the taxonomic classification. Our sites covered the complete distribution of three mouse lemur species. The genetic diversity of each species was investigated by comparing nuclear and mitochondrial markers. Our findings reveal an overall high diversity. We also found significant genetic differentiation among populations. The genetic data indicate that populations sampled in small forest fragments exhibit a signature that could be either due to a recent population collapse or to population structure. Our results provide important information that should be considered when prioritizing populations for effective conservation management.

Major histocompatibility complex (MHC) gene diversity: implications for primate conservation

Leslie A. Knapp

Department of Biological Anthropology, University of Cambridge

The major histocompatibility complex (MHC) is a gene-dense region found in the genomes of all vertebrates. It contains a large number of immune response genes that are essential for the recognition and eradication of foreign antigens and, as a consequence, MHC genes are thought to have great adaptive significance for all living organisms. Many MHC genes also exhibit extremely high levels of allelic diversity and it has been suggested that conservation of MHC diversity can contribute to the vigour and longevity of populations. Recent evidence that MHC genes also influence individual odours, which may be important for kin recognition and mate choice, adds further fuel to the controversy surrounding the significance of MHC genes in conservation genetics. At present, there is no consensus regarding the relative importance, or even the functional consequences, of MHC diversity in natural populations. Similarly, there is surprisingly little known about MHC variation in captive or semi-free ranging populations. This talk will summarize what we know about MHC diversity in primates, consider the limited evidence that variation at the MHC is adaptive in primates and highlight the need for studies of MHC diversity and basic life history traits in natural primate populations.

Polymorphic colour vision in New World primates: causes and consequences for conservation

Nick Mundy

Department of Zoology, University of Cambridge

At least 12 of the 16 genera of platyrrhines have a polymorphism in colour vision ability. All of the males and a proportion of females have dichromatic colour vision, roughly equivalent to human red-green colour-blindness, while the remaining females have trichromatic vision. This variation has a simple genetic basis due to the presence of a polymorphic locus on the X chromosome that encodes middle to longwave visual pigments. The ecological and evolutionary forces acting to maintain the variation are hotly debated. The variation has endured independently in diverse lineages by balancing selection through many millions of years, possibly since the common ancestor of all extant platyrrhines. Trichromatic females enjoy an advantage in detection of red food such as ripe fruit against the background green of the rainforest. Demonstration of ecologically relevant tasks which favour dichromats has been more problematic, but recent work points to an intriguing advantage for dichromats at low light intensities. Whatever the proximate mechanisms involved, variation at the locus is clearly important for population persistence in a wide variety of species. The X-linked opsin locus therefore provides a notable example of a functional gene whose variation should be taken into account in population management. Genotyping of the locus is straightforward and non-invasive genotyping from faecal samples has been successfully applied to wild populations of several primate species.

Primate phylogenomics and conservation

Todd R. Disotell

Center for the Study of Human Origins, Department of Anthropology, New York University

Phylogeny can provide the backbone for many studies of primates and any other organisms for that matter. Taxonomy, comparative studies of diversity, studies of adaptive evolution, behaviour, and almost all other aspects of primate evolution as well as conservation efforts benefit from a robust and well dated phylogeny. Recent advances and the future direction of primate molecular phylogenetic studies are moving these studies from the sequencing of a few hundreds to thousands of bases to whole genome sequencing, whole mitochondrial genome sequencing, and the characterization of unique genomic events such as SINE and LINE insertions. These new data are allowing for better phylogenetic and divergence date inferences.

These phylogenetic inferences and the data used to generate them in turn are proving a boon to primate conservation genetic research. Long sequences and the characterization of numerous genomic markers allow for the discovery of new microsatellite loci, single nucleotide polymorphisms (SNPs), and variable insertion event polymorphisms that can be used to identify and compare the levels of diversity in various populations, subspecies, and species. In combination with improved non-invasive sampling techniques, efforts to strengthen conservation efforts through the use molecular data clearly benefit from phylogenetic studies.

Primate conservation genetics in a Central African context

E. Jean Wickings

Unité de Génétique des Ecosystèmes Tropicaux CIRMF, Franceville, Gabon

Conservation genetics provides tools much more powerful than the simple need to know “who is who” in any community. Phylogeographic studies of species across their entire range reveal the fascinating historical links between populations that have since become obscure. These two relatively recent fields form the basis of our approach to investigating the dynamics of the tropical ecosystem that are the Congo Basin forests of Central Africa. By creating links with field workers across the range of the western lowland gorilla (*Gorilla gorilla*), we were able to collect samples from throughout their range, in order to examine the repartition of genetic diversity and identify those populations in need of protection and management. As an alternative approach, a single-handed sampling effort nationwide in Gabon led to the recognition of such significant genetic divergence within the mandrill species (*Mandrillus sphinx*) to warrant reconsideration of its taxonomic status. The creation of a conservation genetics laboratory within the Central African region has facilitated collaboration between field teams and led to their appreciation of the genetic tools available to help understand species’ biology. This focal point attracts both national and international partners and support, which in turn stimulates local capacity through training and technology transfer.

Future Meetings

PSGB Spring Meeting 2007 at Durham University; Wednesday & Thursday, 18-19 April 2007

The PSGB will be holding its Spring Meeting next year in the cathedral city of Durham. Our former President Rob Barton, Russell Hill and Todd C. Rae have agreed to host proceedings.

PSGB Winter Meeting 2007 The 40th Anniversary Meeting of the Society

Not being a society to shy away from an excuse for a party, we note with some satisfaction that the Winter Meeting next year represents the 40th anniversary of the PSGB. Plans are afoot for an appropriate celebration.

Details of both meetings will be posted soon, so be sure to check the PSGB website for updates <www.psgb.org/Meetings/>.

IPS 2008 - Edinburgh

The Executive Committee of IPS 2008 Edinburgh encourages you to have a look at the new website for the congress <www.ips2008.co.uk>. Details of deadlines, abstract submission and registration will shortly be added. Please contact Paul Honess, Chair of the Executive Committee, for more details <paul.honess@vet.ox.ac.uk>.

Conservation Grant Reports

Pilot study on the conservation status of the hairy-eared dwarf lemur (*Allocebus trichotis*) in Eastern Madagascar

KARLA BIEBOUW

Oxford Brookes University

During this four-month pilot study, we conducted nocturnal surveys and located the hairy-eared dwarf lemur on 12 occasions. This confirms the animal's presence in the Analamazaotra Special Reserve and Forest Station. We located two sites that are probably important areas for the species as animals were observed at least three times in these locations. The Special Reserve could hold three or four groups and the Forest Station at least one group of the species. With a group size of 2-4 individuals, this means 8 to 20 animals in the areas surveyed and a density of 1 to 3 individuals per hectare.

The hairy-eared dwarf lemur is a highly insectivorous, solitary forager; probably active from sunset until dawn. During the night, we heard very high pitched contact calls between members of a sleeping group, coordinating their activity and movements. The species is not exclusive to virgin primary rainforest and could be tolerant of some habitat disturbance. However, the destruction and fragmentation of the hairy-eared dwarf lemur's natural habitat is a serious concern. A long-term reforestation project is currently ongoing; aiming to restore forest corridors between the reserves and Mantadia National Park, but it will take a long time for the trees to grow and it is not clear what state the current population is in. Human disturbance in the area is currently mainly due to tourism and illegal tree cutting. During our nocturnal surveys, we encountered many other species of nocturnal lemurs as well as birds, reptiles, frogs, insects and other mammals. We believe there are at least three or four *Microcebus* species (possibly at least one new to science) and at least two *Cheirogaleus* species. This shows the biodiversity and conservation importance of the area.

We are currently planning a long-term research project involving radio-tracking of *A. trichotis* to improve further our understanding of the ecology and behaviour of the species. The study will include all night animal follows and records of diet, vocalization, social interactions, home range and activity. We will continue helping to train guides and set up an educational project introducing school children and villagers to the variety of nocturnal life in the forests. Our research will also involve Malagasy students.

PSGB Ethical Statement

In the run-up to IPS 2008 Edinburgh, the Executive Committee were faced with the task of recruiting sponsors for the event. A review of existing protocols revealed that the Primate Society of Great Britain, unlike many similar organisations, had no policy on the ethical acceptability of donors. It was deemed that the nature of the Society strongly suggested that such a policy should be implemented. As a result, Paul Honess and the Committee propose that the following text be adopted as Society policy. A discussion on this issue has been placed on the agenda for the next Annual General Meeting, to be held during the Winter Meeting at 12h30 on 5 December 2006 in the West Road Concert Hall, University of Cambridge.

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Preamble

The Primate Society of Great Britain wishes to seek a wide range of sponsorship and donations from diverse sources, including corporations. Whilst PSGB may have some specific criteria related to primate use (e.g. deforestation, capture of wild primates, invasive animal experimentation), it is not thought necessary, nor desirable, to make a long complex ethical policy. PSGB has modified a statement from the Ethical Investors Group, which is broad enough to cover our concerns in a general sense, is short and clear, and includes both positive and negative selection.

The Selection Criteria

Generally speaking, the criteria used to select a sponsor or donor considered suitable to be associated with PSGB can be split into two groups. The first are those which make a positive contribution, while the second are those which are known to have a negative social or environmental effect.

The Positive

Positive selection will result in support and encouragement of sponsors/donors that are associated with the following:

- Environmental protection
- Pollution control
- Conservation and recycling
- Safety and security
- Ethical employment practices

The Negative

Negative selection can result, where required, in the avoidance of sponsors/donors linked with any or all of the following:

- Armaments and nuclear weapons
- Animal cruelty
- Oppressive regimes
- Tobacco promotion
- Environmentally damaging practices
- Poor employment practices
- Gambling
- Pornography

Adapted from <www.ethicalinvestors.co.uk/why.htm>

Ethical Guidelines on Abstract Submission

Authors submitting talks or posters must confirm that the research in question was carried out in accordance with the ASAB/ABS *Guidelines for the Treatment of Animals in Behavioural Research and Teaching*, which can be downloaded from - <asab.nottingham.ac.uk/downloads/guidelines2005.pdf>.

Feedback requested on proposed electronic version of *Primate Eye*

PSGB Council has noted that there is an increasing call from some members for issues of *Primate Eye* to be distributed electronically, rather than via hard copy. It has been suggested that we allow subscribers the choice to 'opt out' of receiving the printed version and to receive a PDF-format file via e-mail instead. Subscribers who do not inform us otherwise will continue to receive the 'paper' version by post. To determine the level of support for this proposal, we would like to hear from the readership generally. Please contact the editor <editor@psgb.org> with your views.

OBITUARY

David Siddle

The Primate Society received the following press release from the Pan African Sanctuary Alliance.

PASA MOURNS DEATH OF SANCTUARY PIONEER DAVID SIDDLER

David Siddle, whose commitment to provide permanent care to injured and unwanted chimpanzees helped lead to the creation of the Chimfunshi Wildlife Orphanage in Zambia, died June 30 2006 after a lengthy illness. He was 78.

In 1983, Siddle and his wife, Sheila, accepted a gravely ill chimpanzee from a game ranger and nursed the infant back to health. That laid the foundation for Chimfunshi, which quickly became one of the most respected chimpanzee sanctuaries in the world. Today, 112 chimpanzees reside at Chimfunshi in spacious, free-range enclosures that cover more than 1,200 acres.

David Siddle was a successful contractor and cattle rancher approaching retirement age when the decision was made to convert much of the family farm into a chimpanzee sanctuary. Over the past 23 years, the Siddles have battled poachers, political upheaval, civil wars, and economic strife to ensure the welfare of orphaned chimpanzees, and Chimfunshi serves as a model for great ape sanctuaries across Africa.

In 2001, the Siddles were awarded MBEs from Queen Elizabeth II for their commitment to wildlife, and they have received numerous other honours and awards. Their dramatic story is told in Sheila Siddle's autobiography, *In My Family Tree: A Life with Chimpanzees* (Grove Press, 2002).

The Chimfunshi Wildlife Orphanage is a charter member of the Pan African Sanctuary Alliance.

For more information, please visit www.panafricanprimates.org or contact <PASAapes@aol.com>.

REPORT : IPS 2006

The 21st Congress of the International Primatological Society in Entebbe, Uganda, was the first to be held in a country containing wild Great Apes; a fact that was honoured by the visit of the Ugandan president Yoweri Museveni. Standing side-by-side with Jane Goodall and Richard Wrangham, the president talked sincerely and supportively about the main theme of the congress 'Primate Conservation in Action', and how his government had acknowledged the importance of preserving their native primate populations and the habitats in which they live. This unique introduction initialised a week of high-quality but diverse symposia that successfully combined many aspects of primate research, whilst managing to maintain a strong conservation focus. Fitting with the theme of the congress, Dr Thomas Struhsaker was deservedly presented with the IPS Lifetime Achievement Award for his outstanding contributions to the field of primatology.

The distinguished quality of work presented throughout the congress was matched with a Ugandan ambience of high-spirits. After establishing the difference between the 'Imperial Resort Beach Hotel' - the conference venue, and the 'Imperial Botanical Beach Hotel' - another large hotel down the road, streams of wind-swept primatologists clutching laptops continually poured into the meetings, having endured death-defying ordeals on the back of mopeds. Colourfully decorated bags - part of the IPS welcome package - dominated the streets and hotels of Entebbe; it has never been so easy to spot a fellow primatologist! The social gatherings that took place throughout the week were also a great opportunity to mix with an international array of primate enthusiasts and to try some of the local beers. One of these, Nile Special, was most definitely 'special' in as much as it invoked a hangover, the like of which I have never experienced before! The farewell dinner was a diverse evening, but the highlight was unquestionably the Ugandan dancers, who were able, whilst dancing energetically, to balance an astonishing number of pots on their heads!

When not attending talks, most of the congress attendees were fortunate enough to sample some of the sights and sounds of Entebbe; trips to Ngamba Island Chimpanzee Sanctuary and the Botanical Gardens proved perfect ways to combine work and leisure. Additionally, for those who chose to venture slightly further after the congress, gorilla treks and excursions to the neighbouring National Parks added unforgettable dimensions to the whole Ugandan IPS experience. The African-twist to this year's IPS congress was not only exciting, it promoted primatology in a country where it was gravely needed. I am looking forward to another fascinating programme in Edinburgh in two years' time!

KIMBERLEY HOCKINGS
University of Stirling

PhD ABSTRACTS

Crop-raiding by *Macaca ochreata brunnescens* in Sulawesi: Reality, Perceptions and Outcomes for Conservation

This study assesses how and the extent to which the booted Sulawesi macaque (*Macaca ochreata brunnescens*) poses a threat to subsistence farmers' livelihoods and, in turn, how this affects farmers' perceptions of a threatened primate species. Through interviews with local farmers, farm surveys, focal-farm watches and troop follows, the impact of raiding by primates on subsistence farmers in Buton, south-east Sulawesi, was investigated. Results from an enclosure plot trial showed that pigs (*Sus celebensis*) caused twice as much crop-damage as monkeys. Farmers' perceptions of damage and measures of monkey damage were found to correlate positively, although weakly. Farmers experiencing low levels of crop-damage were less accurate at estimating damage, whereas those experiencing medium or high levels of damage were more accurate and even underestimated it. Measured damage was a function of monkey behaviour with respect to distance from forest refuges, but perceptions of damage and attitudes towards the monkeys were more associated with human activities, such as access to and from villages. Monkeys tended to damage areas closest to the farm edge; pigs however, once within a farm, caused damage to the entire plot. Crop type grown (sweet potato or maize), distance to forest (close), number of surrounding farms (2 or fewer) and absence of a road near the farm were predictors of greater, more severe monkey damage in a multiple linear regression. Physical and noise methods of deterrence by men were found to be most successful, although the effectiveness of these measures was dependent on whether the monkeys had already raided that day. Regular patrolling reduced the number of raiding monkeys and their penetration depth into the farm, but did not reduce overall frequency. Human attitudes directly affect the conservation of this sub-species. This project initially identifies these attitudes and ultimately suggests potential, appropriate management solutions for these primates.

NANCY PRISTON, University of Cambridge

Female Sexuality and Male Violence in Wild Chimpanzees

Sex is central to chimpanzee society, with non-conceptive sex common. Sexually active females experience a prolonged tumescent phase during every ovarian cycle that greatly exceeds the periovulatory period. All community males are attracted to females with sexual swellings and females experience potentially hundreds of copulations prior to conception. The question of why a protracted signal of sexual attractiveness has evolved, and the role played by extensive non-conceptive sex in chimpanzee society is explored in this work.

This thesis quantitatively examines female sexuality and its links with male violence in a wild chimpanzee community, in Budongo Forest Reserve, Uganda. In contrast to many previous studies, I set out to investigate chimpanzee violence from the female's perspective. As such, I focus on the victims and consequences of male violence and how vulnerability and threat of violence affect chimpanzee associations. Who experiences aggression and under what circumstances (sexual or non-sexual) is assessed. The extent to which females are able to modulate male violence through their own behavioural and physiological strategies is determined through party composition and assessing reproductive parameters. Finally, I ask whether females are able to manipulate males through their sexuality.

I argue that female sexuality plays a key role in structuring chimpanzee society, and consequently, its influence in determining social organisation and community ambience (e.g. volatile v calm) may be underestimated. At Budongo the rate of male violence was very low and there was no temporal association between sex and violence, despite other 'boisterous' male behaviour (i.e., charging displays) being very common. Sexual behaviour was broadly consistent with that seen elsewhere but the study group females displayed increased individual sexual availability and blurred the periovulatory phase of tumescence thereby reducing the intensity of male-male competition. A high availability strategy lowers relative sexual attractiveness as suggested by several lines of evidence: low male competitiveness at matings, with group sex predominating and alternative mating strategies apparently rare, minimal increases in the number of males in attendance in sexual parties relative to non-sexual mixed-sex parties, and sex with long coital duration. Females also showed remarkable levels of gregariousness, relative to other East African conspecifics which decreased their vulnerability to assault by providing few opportunities for males to persecute them. Although females were gregarious, they were not sociable. However, low female attractiveness and gregariousness cannot wholly account for low male aggression. At Tai, females are gregarious and have low attractiveness yet low aggression is not reported. I speculate that the personality and long tenure of the alpha-male ('political' stability), the stable and unambiguous male dominance hierarchy (social stability) and high social competence among community members also contributed to the observed low-level aggression.

The study group's female sexual strategy is inconsistent with the model of largely solitary, but highly attractive, females (e.g., Gombe in Tanzania, Kanyawara in Uganda). Rather it is intermediate between these and the bisexually-bonded and social, but less attractive, Tai Forest females.

SEAN O'HARA, University of Cambridge

BOOK REVIEWS

New Perspectives in the Study of Mesoamerican Primates: Distribution, Ecology, Behavior and Conservation

Alejandro Estrada, Paul A. Garber, Mary Pavelka & Leandra Luecke, Eds. (2005)

Springer

ISBN 038725854X (hardback) £75.00 / \$139.00

As a mountainous meeting place for North and South American flora and fauna, Central America is, in biological terms, exceedingly rich with a great diversity of habitats and an abundance of species, both endemic and more widespread. The primate fauna of the region is not rich when compared to, say, Amazonia. In Central America it is seldom that more than three primate species will occur in sympatry, compared with the 8-11 that is common throughout most of Amazonia.

However, Central America hosts some of the most thoroughly-studied tropical and sub-tropical forests on the planet, areas whose ecological intricacies are far better understood than anywhere else. Areas like Panama's Barro Colorado, Santa Rosa and a slew of other sites in Costa Rica, Belize and Mexico have long been sites of primate study. In addition, such sites have been the source of immense bodies of long-term zoological and botanical data against which current primate studies can be contextualized.

Despite this plethora of data there has, until now, been no synthesis of what is known about Meso-American primates. Which is one of the reasons that *New Perspectives in the Study of Mesoamerican Primates* is so welcome an addition to the primatological bookshelf. Part of Springer's excellent 'Developments in Primatology' series, the book's 43 authors cover a wide variety of topics, with a depth and breadth that will be of great use not only to current and future researchers working on primates in the region, but form the bases for productive comparisons with primate communities in other parts of the world.

Following a scene-setting summary by the editors in which the current state of knowledge is summarized, gaps identified, conservation priorities cited and the array of human impacts exhaustively tabulated, the following 22 chapters of *New Perspectives* are divided between five parts. Part 1 contains a fascinating overview of the biogeography and distributional history of Central American primates and, along with providing a fine geological summary for the region, identifies the progressive waves of immigration that led to current distributions. There is also a very welcome chapter in which Colin Groves and colleagues seek to clarify the tangle of taxonomic names that has grown up over the years, to fix species boundaries and to define which populations merit sub- and full species status. The extensive 50-page treatment recognizes 21 species and sub-species of which 16 are endemic to the region. Part 2 covers population responses to disturbance and, after an introductory overview by the editors, contains papers on effects of forest fragmentation, hurricanes, intestinal parasites (though, sadly, three of the four chapters deal specifically only with *Alouatta pigra*). The third section considers a wide variety of behaviour and ecology aspects, including behavioural plasticity, travel patterns, use of landmarks, aspects of food choice, and primate sociology. Part 4, conservation and management, ranges widely

across the list of possible topics, and includes reports on the progress of spider monkey reintroductions, an overview of human-monkey coexistence and traditional agricultural methods, metapopulation analyses, mapping projects and a fascinating chapter by Alejandro Estrada and colleagues on the role of archaeological sites in the protection of primates in Guatemala and southern Mexico. The final chapter identifies conservation priorities and the work needed to address them, with a nice summary of how new technologies (such as analysis of fecally-derived hormones) are likely to contribute.

A welcome aspect of the book is the editor's use of a biogeographical rather than geological definition of 'Central America', a recognition that the Choco region of Colombia's northern coast is brought into the discussion. There are, however, some strange omissions: the highly-successful black howler transplantation project at Cockscomb Basin, Belize, for example, and the absence of any papers dealing with community-based primate-focused conservation initiatives (such as Bermudean Landing, Belize – a complex situation that is so far from the conservation idyll it is often painted in text books that it merits a place as a practical case study). In a region where it is a highly significant economic force, the failure to devote a specific chapter to the pros and cons of ecotourism as a regional conservation force is also something to be lamented. A chapter on fossil primates of the region would have added illuminating perspectives, and one can't escape the feeling that the conservation sections might have benefited from a more proactive prescriptive approach where the threats and possible solutions were outlined for each taxon. In a fascinating area of such high human population growth and concentrated deforestation, this, above all else, would seem to be the prime calling of primatology in the region at the present time.

ADRIAN A. BARNETT

Centre for Research in Evolutionary Anthropology, Roehampton University

Parenting for Primates

Harriet J. Smith (2005)

Harvard University Press

ISBN 0674019385 (hardback) £18.95 / \$29.95

Popular scientific books can fall uncomfortably between two stools – too much science, often inaccurate, or extreme speculation and interpretation to attract the popular (money-making) market. Fortunately this book does neither, but I'm not quite clear what the book aims to do for the reader. Harriet Smith is both an expert in primate social development and an experienced clinical psychologist working with family problems. The science of primate development is excellent and lucidly presented, as might be expected given her background, and she has covered almost every topic. She starts with the realisation that non-human primates aren't instinctive parents; they fumble, reject, bite and drop infants. In the absence of experience, they are abusive and incompetent. So far, so human? Human and non-human primates have similar learning needs in relation to handling and responding to their infants. Their biology of lactation and natural weaning are almost identical, and the social dimensions of mothering, fathering, parenting and development are extremely diverse among the primate group as a whole.

Chapters cover maternal styles and responsiveness, paternal presence (or absence), a very brief review of alloparenting which is developed further in relation to group parenting contexts and single parenting, two chapters on the process of development – weaning and independence – and a chapter on child abuse. It concludes with a very brief summary of how much parents matter to ensuring survival and self esteem. All these topics are handled with skill and knowledge, well supported with references to the recent major primate literature. There are also reasoned discussions of the anthropological literature, but these are of less depth than either the clinical or the primatological perspectives.

The only problem with this book, as I see it, is that primatologists working with development have probably read almost all the literature digested and presented here, and many are wary of adding value to primate observations by direct analogy to humans. During human evolution, the ‘primate template’ has been modified by brain expansion, extended development, enhanced longevity, cooking and weaning foods (not to mention milk from domestic species), and above all the facility for learning associated with language, self and other, and technology. While primate parenting does provide the “Mother Nature” perspective so beautifully documented by Sarah Hardy, clinical problems within families may arise from those deviations from the primate template that are responses to specifically modern human adaptations. Harriet Smith makes an interesting and useful case for using primate parenting to understand some of what goes wrong in families, and she is generally cautious in her interpretations. But the value of the book is less in its primatology, excellent as that is, and more in getting humans, including other clinicians, to appreciate the varied array of parenting styles available to primates as a group.

PHYLLIS C. LEE

Behaviour and Evolution Research Group, University of Stirling

Seasonality in Primates: Studies of Living and Extinct Human and Non-human Primates

Diane K. Brockman & Carel P. van Schaik (2005)

Cambridge University Press

ISBN 0521820693 (hardback) £70.00 / \$120.00

Oscar Wilde may have said “*conversation about the weather is the last refuge of the unimaginative*”, but here Brockman and van Schaik show how important a consideration it is for both the ecology of primates and our own evolution. When considering the tropics it is all too easy for those of us from temperate zones to assume that within each tropical biome climate and day length are constant. This book reminds us that whilst not as marked as more northerly or southerly latitudes, the tropics undergo significant seasonal variation in both climatic and resource availability, and that this variation has profound effects for primates.

In Part I van Schaik and Brockman introduce their book and clearly set out their aims. They briefly outline the causes of seasonality and the ways in which it can impact on the ecology of primates; food availability, extent of cover and habitat structure, social life and reproduction. The effects of the much longer-term global changes in seasonality caused by Milankovich cycles on both primate and human evolution are

then discussed. In Part II van Schaik and Pfannes explore phenology within the tropics, setting the scene against which the play of primate ecology takes place. This important chapter highlights the differences in the timing of flowering, fruiting and flushing throughout the tropics.

Now that the scene has been set, the following three sections deal with seasonal influences on behavioural ecology, reproduction and social organisation, and community ecology. In general these chapters are well written, providing either detailed case studies or broad meta-analyses. It is pleasing to see a chapter on the effects of day length and heat stress, since as Hill notes, activity budgets may be significantly constrained by these often forgotten factors. The final section concerns seasonality and human evolution, with the last chapter by Brockman asking the question, "What do studies of seasonality in primates tell us about human evolution?".

This volume provides a timely focus on the importance of seasonal variation for the ecology and evolution of primates. The balance between case studies and broad meta-analyses is good, and the chapters are arranged in a logical sequence, leading the reader through from the direct effects of seasonality on habitat structure and resource availability to its influence on both behavioural and socio-ecology before considering the implications for primate and human evolution. Consequently this book will be of use to both primatologists and anthropologists. As they acknowledge, it is written primarily for researchers and post graduate students, although selected chapters could be used to augment undergraduate behavioural ecology teaching.

The overarching idea of examining the implications of seasonality on human evolution results in a slight bias towards Old World studies. Among the species covered, baboons and lemurs push to the fore due to their inhabiting relatively strongly seasonal areas. These minor criticisms could have been balanced by a more explicit consideration of Neotropical primates and the inclusion of more detailed information on the very northerly macaques and colobines. However, these points do not detract from what is a very useful and well written volume.

ANDREW SMITH
Anglia Ruskin University