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## **COMPLETION REPORT by K J Hockings**

**Primate Origins of Human Evolution: From Genes to Mind (HOPE-GM)**

**Japan Society for the Promotion of Science (JSPS)**



Photo of macaques and deer on Yakushima Island

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### **Project title**

Studying human-nonhuman primate interactions: an ethnoprimateological approach

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### **Project dates**

29<sup>th</sup> January 2010 – 28<sup>th</sup> April 2010.

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## Brief Introduction

Professor Matsuzawa, Director of the Primate Research Institute at Kyoto University, invited 8 foreign young scholars to participate in a new research project titled HOPE-GM (Primate Origins of Human Evolution: From Genes to Mind), funded by JSPS. In addition to forging international collaborations between Japanese and non-Japanese Research institutions, the main aim of this initiative was to promote multi-disciplinary research into the primate origins of human evolution through studying nonhuman primate socio-ecology, cultural primatology and genomics in both wild and captive settings. The fellowships were given for a 3 month period and were based at the Centre for International Collaboration of Advanced Studies in Primatology (CICASP) in Kyoto University under the coordination of Professors T Matsuzawa, I Adachi, and M Hayashi.

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## Activities Undertaken

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### 1. Publications – Journal articles & Special Issues

- 1.1. Research article (submitted and currently under review): *Fission-fusion dynamics in chimpanzees at Bossou, Republic of Guinea: Ecological constraints in an anthropogenic environment* (authors: Hockings, K J; Anderson, JR; Matsuzawa T).

The biological traits of species that are associated with specific responses to anthropogenic threats (such as deforestation and/or agricultural development) are well documented. However, less is known about how animals specifically adapt their socio-ecology in agricultural-forest ecotones. From 1,673 hours of focal observations of a wild chimpanzee community (*Pan troglodytes verus*) we assessed chimpanzee fission-fusion dynamics in an ecological constraints framework. Our results highlight that cultivated resources provide chimpanzees with an alternative to fissioning and that both sexes integrate crops into their ecological strategy in different ways. We propose that access to

energy-rich crops must be incorporated into models that are traditionally used to explain fission-fusion dynamics and other socio-ecological adaptations to more natural environments.

1.2. Commentary (submitted and accepted in American Journal of Primatology as part of an Ethnoprimateology Special Issue): *The ethnoprimateological approach in primatology* (authors: Fuentes, A; Hockings, KJ).

Recent and long-term sympatries between humans and nonhuman primates (hereafter primates) are central to the behavioural ecology, conservation and evolutionary trajectories of numerous primate species. Ethnoprimateology emphasizes that interconnections between humans and primates should be viewed as more than just disruptions of a “natural” state, and instead anthropogenic contexts must be considered as potential drivers for specific primate behavioural patterns. Rather than focusing solely on the behaviour and ecology of the primate species at hand, as in traditional primatology, or on the symbolic meanings and uses of primates, as in socio-cultural anthropology, ethnoprimateology attempts to merge these perspectives into a more integrative approach. As human pressures on environments continue to increase and primate habitats become smaller and more fragmented, the need for a primatology that considers the impact of human attitudes and behaviour on all aspects of primate lives and survival is imperative.

1.3. Research article (in preparation): *Where humans and chimpanzees meet: Exploring the dynamics of sympatry in Cantanhez National Park, Guinea-Bissau, using an ethnoprimateological approach* (authors Hockings, KJ; Sousa, C).

Using an ethnoprimateological approach we set the context for human-chimpanzee sympatry and interactions in Cantanhez National Park, Guinea Bissau. In particular we provide an overview of the situation as it pertains to one hitherto unstudied chimpanzee (*Pan troglodytes verus*) community inhabiting an anthropogenically-impacted landscape in Caiquene and Cadique, central Cantanhez,

focussing on specific aspects of cultivated resource competition. We conclude by discussing the conservation management of these apes and the potential for long-term coexistence in a changing world.

1.4. Continued work as a guest co-editor on an Ethnoprimateology Special Issue in American Journal of Primatology (anticipated publication date: October 2010)

The human-nonhuman primate interface is a core component in modern primatology. Ongoing research projects and a growing number of publications demonstrate that long-term sympatry between human and nonhuman primates results in a complex web of behavioural, ecological, epidemiological, and economic relationships. There is a growing recognition of the relevance of this long-term sympatry between human and nonhuman primates to the emerging primatology of the new millennium. Increasingly investigations into primate groups and human populations need to incorporate their interactions, potential pathogen sharing, and the role of the anthropogenically-impacted environment. In this special issue we seek to present selected examples of the study of this interface as core contributions to the emerging area of ethnoprimateology. Readers will be given both specific data driven examples and more general commentaries on ethnoprimateological situations around the globe. Our goal is to continue the push to make ethnoprimateological approaches central to general primatology by bridging disciplines that normally go their separate ways, to provide examples as to how such research programs are undertaken and to entice members of the primatological community to consider the potential for ethnoprimateological practice as part of their own research programs.

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## **2. Symposiums and conferences**

2.1 Conference co-organiser: HOPE-GM Primate Mind and Society, Kyoto, Japan, 22-23<sup>rd</sup> March 2010.


An international meeting to provide the opportunity for JSPS-HOPE invitees and Japanese scholars to present their current research and exchange scientific findings and perspectives (see cover page below & PRI website for programme/further details).

2.2 Symposium co-organiser: XXIII Congress of the International Primatological Society, Kyoto, Japan, 17<sup>th</sup> September 2010.

Understanding how nonhuman primates adapt their behaviours to anthropogenic contexts is central to answering questions about how they perceive and adjust to human-influenced situations and environments, and whether or not sympatry is sustainable. The high cognitive abilities of nonhuman great apes mean that they are often able to adapt flexibly and innovatively to human-induced changes, but large home ranges and body size often result in contact, competition and conflict with local people. Sympatry between human and nonhuman great apes results in a complex web of behavioural, ecological, epidemiological, social and economic relationships. In this symposium we seek to present selected examples of how great apes change their behavioural patterns to anthropogenic contexts that range from brief tourist encounters to daily contact with local people in cultivated areas and roadsides. These interactions will be presented within a human and great ape ethno-primatological framework, and as such will provide a more holistic approach to studies of great ape behaviour and conservation in changing environments. Such knowledge is crucial when attempting to develop strategies aimed at managing ape populations affected by humans, with effective conservation strategies requiring species-specific and in-depth knowledge of great ape behaviour.

2.3. Attended Kyoto University meeting in Kyoto, 27<sup>th</sup> February, where a range of distinguished Japanese scholars from Kyoto University presented their lifelong research (see photo of attendees below).

2.4. Participated in monthly Foreigner's meetings at Kyoto University, 10<sup>th</sup> February & 11<sup>th</sup> March.




INTERNATIONAL SYMPOSIUM  
**“HOPE-GM LECTURES  
ON PRIMATE  
MIND *and* SOCIETY”**

**Primate Research Institute,  
Kyoto University**  
*<http://www.kyoto-u.ac.jp>*

**22-23 March 2010, Kyoto, Japan**

**ABSTRACT BOOKLET**  
International Conference Hall I  
(2nd floor in Clock Tower Centennial Hall)





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### **3. Oral Presentations**

3.1. Hockings, K.J. The human-chimpanzee interface: behavioural, ecological and cognitive perspectives. Paper presented at the Psychology seminar series, Kyoto University, 9<sup>th</sup> February.

3.2. Hockings, K.J. Fission-fusion dynamics in chimpanzees at Bossou: ecological constraints in an anthropogenic environment. Paper presented at the HOPE-GM Primate Mind and Society conference, Kyoto, Japan, 22<sup>nd</sup> March.

3.3. McGrew, WC; Hockings, KJ; Matsuzawa, T. Spontaneous ingestion of alcohol by non-human primates: Seven hypotheses and some preliminary findings. Co-author of paper presented at the intersection of comparative cognitive science and field science conference, Nagoya, 3<sup>rd</sup> April.

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### **4. Field Excursions**

4.1. Chimpanzee Sanctuary Uto, 18-19<sup>th</sup> February

The chimpanzee sanctuary in Uto (now part of the Wildlife Research Centre, Kyoto University) was established on the 1<sup>st</sup> April 2007 to care for ex-laboratory chimpanzees, many of whom are infected with the Hepatitis B and C viruses. I accompanied Professor Tomonaga to the sanctuary and upon my arrival was informed about its' history and how the team (in particular Etsuko Nogami) are making every effort to improve the chimpanzee's welfare. Etsuko Nogami and Sana Inoue carefully guided me through the establishment, where I learnt about the day-to-day running of the sanctuary. I observed simple choice tasks that were conducted by Professor Tomonaga, whereby individual chimpanzees were asked to choose between one or two pieces of fruit. I also observed Dr Morimura and assistants mix different parties of adult male chimpanzees (something that is done on a regular basis with different individuals) in an effort to make 'fission-fusion type bachelor groups' to improve sociality and wellbeing. Based on my experiences with wild chimpanzees, this was something that I

was very cautious about, but I was amazed with how calmly the chimpanzees adapted – very impressive!



#### 4.2. Koshima Island, 29-30<sup>th</sup> March

We stayed at the Koshima Field Station where research has been ongoing since 1947. Renowned for studies in the cultural propagation of sweet potato washing by Japanese monkeys, we were able to visit Koshima Island by boat and provide the monkeys with sweet potatoes, now a rare treat, and watch this interesting behaviour (see pictures below, photos taken by S Carvalho).



#### 4.3. Yakushima Island, 31<sup>st</sup> March-2<sup>nd</sup> April

The Island of Yakushima is a UNESCO world heritage site that is rich in fauna and flora, and is renowned for the ancient cedar forests. This island is the southernmost limit of the Japanese macaque



and is home to a unique subspecies, *Macaca fuscata yakui*. One of the most compelling aspects of macaque ecology on this Island is their sympatry with deer, an apparently commensal relationship that certainly deserves further research attention (see cover photo).

4.4. Other cultural excursions throughout the 3 months included trips to cities including Tokyo, Osaka, Nagoya, Hiroshima and Kyoto, in addition to visiting more rural locations such as the Noto-Hanto peninsula, Hakone National Park, Arashima, Nara (see photo), Koya-san (see photo), Shirakawa-go, and Takayama.



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## **Acknowledgements**

Firstly, I am deeply grateful to Professor Matsuzawa for the initial invite, continual guidance, and unwavering support throughout this visiting fellowship and for the last 7 years. Professor Misato Hayashi who was commissioned to specifically take care of my stay, I would like to thank you for your kindness and the time that you invested to ensure that my stay was productive and comfortable.

I would also like to express immense gratitude to Professor Ikuma Adachi who competently tackled any problem that the invitees presented him with, however large or small; I truly believe you are a great asset to Kyoto University.

Thanks to Professor Masaki Tomonaga for allowing me to accompany him to the Chimpanzee Sanctuary in Uto and all his help with other matters. A special thanks to Etsuko Nogami, Sana Inoue and Naruki Morimura for their hospitality and all their efforts to improve chimpanzee welfare at the sanctuary. Thanks to Yoshiaki Sato and Fumihiko Kano for all their work in helping to organise our trip to Koshima & Yakushima, we all had a great time! I would also like to express my sincere thanks to other members of PRI for enhancing my stay, namely Professor Mike Huffman, Mari Hirose, Tomoko Imura, Takaaki Kaneko, Andrew Macintosh, Chris Martin, Takahisa Matsusaka, Gaku Ohashi, Reiko Sawada, Makiko Uchikoshi, and last but certainly not least Yumi Yamanashi.

Thanks to Michiko Sakai for all her administrative assistance, and a special thanks to Mami Shikuwa for her help in just about everything, her never tiring patience and her friendship. Finally, I would like to extend a huge thank you to all my HOPE GM colleagues: Anna Albiach Serrano (Max Planck Institute), Malini Suchak (Emory University), Paco Bertolani (Cambridge University), Kat Koops (Cambridge University), Sonja Koski (Cambridge University), Susana Carvalho (Cambridge University), in addition to the senior HOPE GM invitees: Professors William McGrew (Cambridge University), Svante Paabo (Max Planck Institute) and Frans De Waal (Emory University). Thanks to C Sousa, my post-doc mentor, for all her continued support and collaboration, I owe you a great deal.