

HOPE-GM REPORT 2010

Primate Origins of Human Evolution:
From Genes to Mind



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Summary

The HOPE-GM program 'Primate Origins of Human Evolution: From Genes to Mind' funded by JSPS provided the opportunity to 7 foreign young scholars from various research institutions to come to Japan for the duration of 3 months. The senior host of the program was Prof. Tetsuro Matsuzawa, director of the Primate Research Institute (PRI), University of Kyoto, Inuyama, Japan. Co-hosts were Prof. Ikuma Adachi and Prof. Misato Hayashi. The fellowship was based at the Centre for International Collaboration of Advanced Studies in Primatology (CICASP) at the Primate Research Institute of Kyoto University. The main aim of the fellowship was to encourage international collaboration between Japanese and non-Japanese researchers and promote multidisciplinary studies on the primate origins of human evolution. This program provided a stimulating opportunity for young primatologists from diverse scientific backgrounds, including both captive and field research, to exchange ideas and establish possible future collaborations.

Duration of stay

Arrival in Japan (KIX): 12 March 2010

Departure from Japan (KIX): 10 June 2010



The author of this report observing Japanese macaques on Koshima Island.

Activities

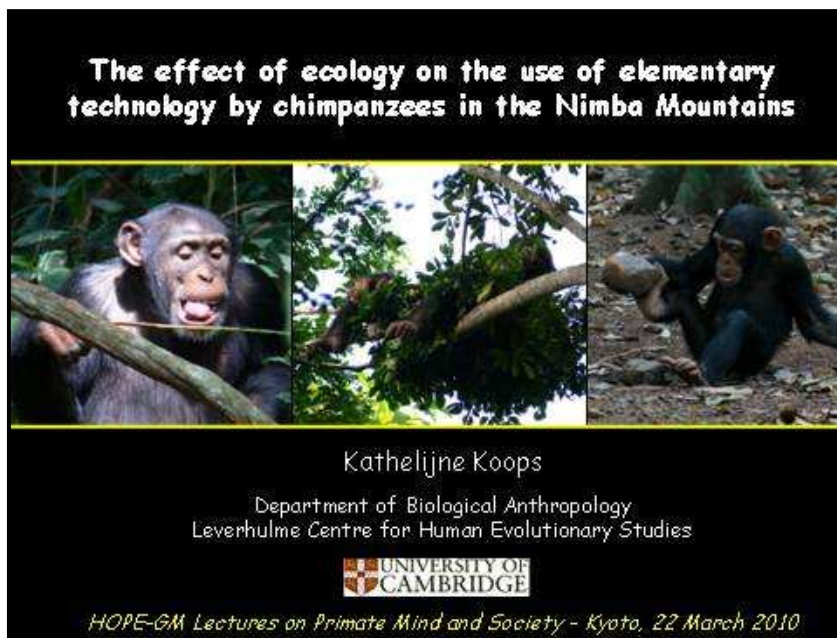
I) Conference participation

1) 'Hope-GM Lectures on Primate Mind and Society'

Kyoto University, 22-23rd March 2010

Title of presentation:

'The effect of ecology on the use of elementary technology in foraging and nest-building in the chimpanzees of the Nimba Mountains, Guinea'



The effect of ecology on the use of elementary technology by chimpanzees in the Nimba Mountains

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HOPE-GM Lectures on Primate Mind and Society - Kyoto, 22 March 2010

Abstract:

Elementary technology denotes the knowledgeable use of one or more physical objects as a means to achieve an end. Today we know little about the effects of ecological conditions on the use of elementary technology. The question that presents itself is essential to the understanding of the evolution of material culture: How does the environment affect the use of elementary technology? The aim of my Ph.D. research is to characterize the environmental factors that influence the use of elementary technology in foraging and in shelter construction (i.e. nest-building) among

unhabituated chimpanzees (*Pan troglodytes verus*) in the Nimba Mountains, Guinea, West Africa. The following questions are addressed: 1) Which forms of elementary technology in foraging are present in the Nimba chimpanzees (e.g. nut cracking, termite fishing, ant dipping) and do they vary seasonally? 2) Is the use of elementary technology in foraging related to the temporal or spatial availability of target species (e.g. nuts, termites, ants) or appropriate tool materials? 3) Is the use of elementary technology in foraging related to the temporal or spatial availability of other food sources (e.g. fruit)? In addition, I address the question: what is the function of nest-building, both in trees and on the ground?

2) 'The intersection of comparative cognitive science and field science'
Nagoya, April 3rd 2010. Attendance.

II) Visit to CICASP

Primate Research Institute, Kyoto University, Inuyama.

Dates: 12 – 21 March, 25 – 28 March, 4 – 5 April, 12 April – 28 May, 8 – 9 June.

During my stay at the Centre for International Collaboration of Advanced Studies in Primatology (CICASP) at the Primate Research Institute, I had the opportunity to be part of this stimulating scientific community of Japanese primatologists. By attending the weekly seminars of the department of Behavioral and Brain Sciences, organized by the Language and Intelligence Section, I gained insight into the many different lines of research being carried out at PRI. In addition, I had the opportunity to be present at the computer experiments and face-to-face interactions carried out by Prof. Matsuzawa with the chimpanzees Ai and Ayumu. This was an enriching and fascinating experience for me, coming from a background of working with chimpanzees in the wild. It was astonishing to see how well the chimpanzees performed in the numerical memory task. In addition to observing the chimpanzees and macaques at PRI, we had the opportunity to visit the Research Resource Station (RRS) with Prof. Matsuzawa (May 1st). I was very impressed by the conditions under which the chimpanzees and macaques at PRI and RRS were housed. Furthermore, I participated in a Scientific Debate (April 28th), organized by Dr. Sachiko Hayakawa, which was specifically aimed at encouraging scientific exchange in English between Japanese and non-Japanese researchers. I also attended the monthly Foreigners Meetings (April 14th, May 13th) organized by Prof.

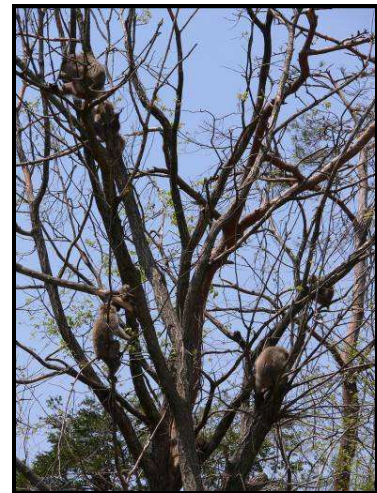
Matsuzawa, which was a very useful platform to meet and exchange information with foreign researchers based at PRI. My main research activity during my stay at CICASP was to develop a project for my post-doctoral research. My PhD will be completed in the beginning of 2011. My stay at PRI was therefore the perfect opportunity to work on a research proposal for my post-doc and make the most of opportunities to discuss with my long-time collaborator, Prof. T. Matsuzawa, as well as with future collaborators, Dr. Takeshi Furuichi and Dr. Chie Hashimoto. The aim of my Ph.D. research is to document and characterize the environmental factors that influence the use of elementary technology in foraging and in shelter construction (i.e. nest-building) among wild chimpanzees in the Nimba Mountains, Guinea (West Africa). During my post-doctoral research, I aim to broaden my scope and include next to the Nimba study site, both an established East African chimpanzee study site (Kalinzu Forest, Uganda) and a long-term bonobo (*Pan paniscus*) study site (Wamba, Democratic Republic of Congo) in an *intra*- and *inter*-species comparison of factors influencing the use of elementary technology. During my stay at CICASP I was able to lay the foundation for this collaborative research project.



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Figures: A. Ayumu at PRI; B. Japanese macaque at PRI; C. Japanese macaques at RRS.

III) Field excursions

1) Koshima Island

In addition to our stay at CICASP, we had the opportunity to make a number of field excursions. We visited Koshima Island from 29 – 30 March with our host-guides Yoshiaki Sato and Fumihiro Kano. We arrived at the Koshima Field Station (on the mainland) on the 29th of March and visited Koshima Island on the 30th of March. It was a wonderful opportunity to visit this famous field site where research has been ongoing since 1948 and to see with my own eyes the famous sweet potato-washing behaviour (see photo). Sweet potato-washing was observed for the first time in 1953 by Satsue Mito and subsequently became the first description of culture in nonhuman animals. During our visit, we also observed wheat-sluicing and many interesting social interactions. We were accompanied by on-site researcher Mr. Suzumura, who provided us with detailed information on the 113 monkeys present today on Koshima Island. This was a truly unforgettable experience.

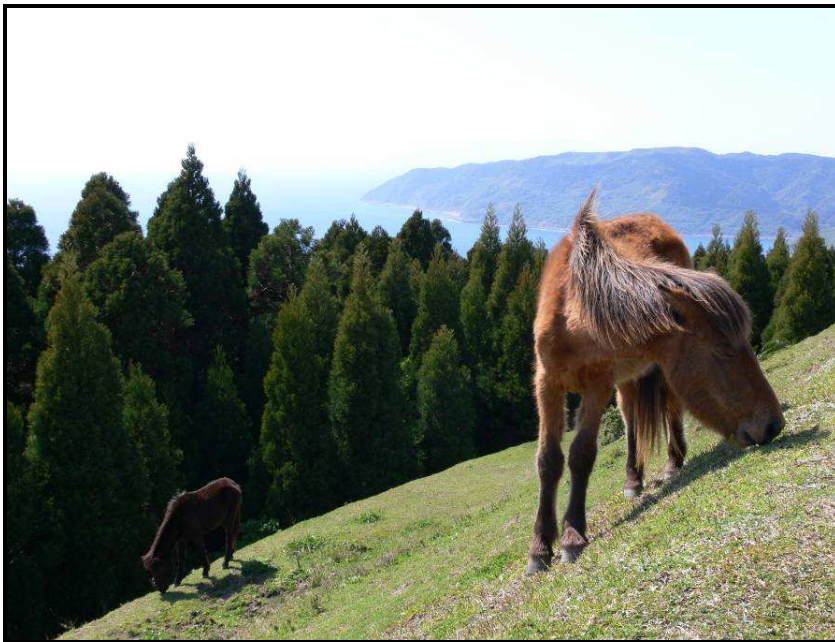


Sweet potato-washing by Japanese macaque on Koshima Island.

2) Toi Peninsula

We also had the opportunity to visit Toi Peninsula in Miyazaki prefecture on the 29th of March, since it is in close proximity to Koshima Island. Here we were able to observe at

close range the wild horses found in this area of Japan (see photo). Toi-peninsula is the place where famous Japanese primatologist Kinji Imanishi studied wild horses before starting his studies of the Japanese macaques on Koshima Island where he founded Japanese primatology almost 62 years ago. I very much enjoyed observing the wild horses, or rather ponies, in this beautiful location, and was amazed at how well habituated they were to human presence.



Wild horses on Toi Peninsula.

3) Yakushima Island

We visited Yakushima Island from 31st of March – 2nd of April together with our host-guides Yoshiaki Sato and Fumihiro Kano. Here we had the chance to stay at a traditional Japanese ryokan with a beautiful onsen next to the ocean! Yakushima Island is a UNESCO World Heritage Site, with stunning scenery and natural beauty, such as the ancient cedars and wild blooming rhododendrons. We were very lucky to be able to observe the Yakushima macaques, a subspecies of Japanese macaques, on several occasions. The first observation was perhaps the most impressive, as we observed the macaques together with sika deer (see photo). Our second observation was of a large group of monkeys feeding on leaves up in the trees (see photo). Overall, Yakushima Island was absolutely magnificent and I hope to visit this beautiful place again.



Yakushima macaques and sika deer on Yakushima Island.



Yakushima macaques feeding in the trees, Yakushima Island.

Great Ape Research Institute (GARI)

From April 6th – 8th we had the opportunity to visit the Great Ape Research Institute (GARI), funded by Hayashibara, in Okayama prefecture together with our guest-hosts Yumi Yamanashi and Tadatoshi Ogura. We received a warm welcome from Dr. Satoshi Hirata and his co-workers at GARI. In the morning, we were given an elaborate tour of the amazing research facilities and chimpanzee enclosures. We were even allowed to explore the chimpanzee climbing structures in the outdoor enclosure! In the afternoon, we attended computer experiments in the booth of the outdoor enclosure with Dr. Shinya Yamamoto and Dr. Sana Inoue. In addition, we were able to attend a number of face-to-face experiments with Dr. Hirata and colleagues (see photo). I was very impressed by how calmly all chimpanzees (2 adult males, 3 adult females, 1 juvenile, 1 infant) participated in the experiments and by the close bonds between researchers and chimpanzees. The visit to GARI was very informative and I enjoyed learning more about this research facility.

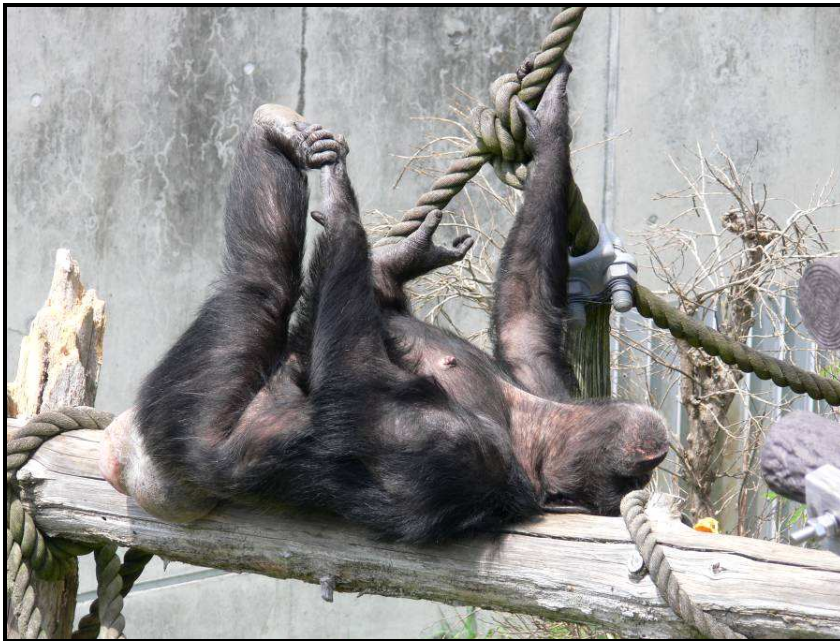


Dr. Satoshi Hirata in a face-to-face nut-cracking experiment with an adult male chimpanzee.

4) Chimpanzee Sanctuary Uto (CSU)

We visited the Chimpanzee Sanctuary Uto (CSU) in Kumamoto prefecture between the 9th – 10th of April together with our guest-hosts Yumi Yamanashi and Tadatoshi Ogura. CSU is the first chimpanzee sanctuary in Japan and was established in 2007, after

Japan placed a ban on invasive chimpanzee research. The sanctuary is home to over 50 chimpanzees, all formerly used in experiments by a pharmaceutical company. At CSU, we were welcomed by Etsuko Nogami, who gave us an extensive tour of the sanctuary. As it happened, we were present at the birthday party of one the chimpanzees. The keepers had made a huge birthday cake with fruit and vegetables which was offered to the lucky chimpanzee and his group-mates. It was very fascinating to observe the social dynamics between the adult males as they went about feasting on the cake. We visited the all-male groups, as well as the mixed sex groups in the larger outdoor enclosures (see photo). I was very impressed by the efforts of the staff at CSU to enrich the chimpanzees' lives and to improve their living conditions.



An adult female chimpanzee at CSU in the outdoor enclosure.

5) Amakusa dolphin watching

On the 10th of April, we had the opportunity to go to Amakusa in Kumamoto prefecture to observe wild bottle-nosed dolphins (see photo). A group of over 300 individuals lives in this area year-round. We were able to observe these incredibly intelligent and social animals in their natural habitat for 40 minutes. This was another truly amazing experience!



Wild bottle-nosed dolphins in Amakusa.

IV) Cultural excursions

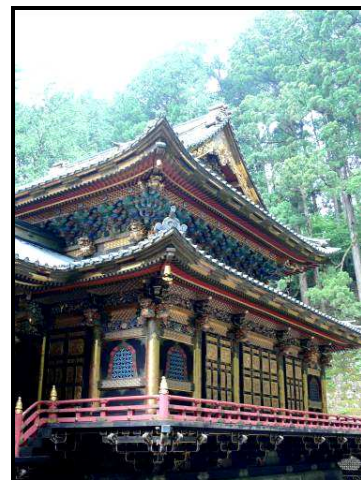
In addition to the abovementioned field excursions, I had the opportunity to visit a number of places in Japan with great historical and cultural importance. These excursions included Osaka (Sumo wrestling tournament), Kyoto (e.g. Kinkaku-ji; see photo A), Tokyo, Koya-san (e.g. Okunoin Cemetery; see photo B) and Nikko (e.g. Nikko Mausoleum Rin-no-ji Taiyuin; see photo C).



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Acknowledgements

First and foremost I would like to thank Prof. Tetsuro Matsuzawa for the invitation to participate in the HOPE-GM program, as well as for continuous support and guidance over the past 7 years. In addition, I am grateful to Prof. Ikuma Adachi and Prof. Misato Hayashi for their help during our stay in Japan. Also many thanks to Yoshiaki Sato and Fumihiko Kano for organizing our trips to Koshima and Yakushima Islands, and to Yumi Yamanashi and Tadatoshi Ogura for arranging our trips to GARI and UTO. In Koshima, thanks goes to Mr. Suzumura and Mr. Kanji for showing us the potato-washing macaques. At GARI, I would like to thank Prof. Satoshi Hirata, Shinya Yamamoto, and Sana Inoue and co-workers for their warm welcome. At CSU, thanks to Etsuko Nogami and Naruki Morimura and colleagues for kindly receiving us. Furthermore, I am incredibly thankful for all the help as well as friendship from the members of PRI: Prof. Takeshi Furuichi, Prof. Chie Hashimoto, Dr. Sachiko Hayakawa, Prof. Mike Huffman, Mari Hirose, Tomoko Imura, Takaaki Kaneko, Fumihiko Kano, Andrew Macintosh, Chris Martin, Takahisa Matsusaka, Tadatoshi Ogura, Gaku Ohashi, Yoshiaki Sato, Reiko Sawada, Prof. Masaki Tomonaga, Makiko Uchikoshi, Yumi Yamanashi and Lira Yu. Thanks to Michiko Sakai for administrative assistance. And a very special thanks to Mami Shikuwa for all her help with administrative matters, practical issues, support and friendship. And last but not least, I would like to thank the other HOPE-GM young scholars for all their help in arranging the excursions and for making it a wonderful experience together: Anna Albiach Serrano (Max Planck Institute), Paco Bertolani (University of Cambridge), Susana Carvalho (University of Cambridge), Kimberley Hockings (New University of Lisbon), Sonja Koski (University of Cambridge) and Malini Suchak (Emory University), as well as the senior HOPE-GM invitees: Prof. William McGrew (University of Cambridge) and Prof. Frans de Waal (Emory University).

