The 5th International Symposium on Primatology and Wildlife Science

3rd (Thu) – 6th (Sun), March, 2016
Inuyama International Sightseeing Center “FREUDE”
The 5th International Symposium on Primatology and Wildlife Science

March 3rd (THU) - 6th (SUN) 2016, INUYAMA INTERNATIONAL SIGHTSEEING CENTER (FREUDE)
2F

Lounge (Snacks & Drinks)

Poster Presentation & Social Gathering (dinner party)

1F

Restaurant “Glanz”
AM10:30-PM 9:00

BF

Car Parking
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<th>Time</th>
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<tr>
<td>09:00-09:30</td>
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<td>09:30-10:50</td>
<td>[Session 4: Invited Talk and Progress report by TOSHIO KURODA (20)]</td>
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<td>10:50-11:40</td>
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<td>11:40-12:00</td>
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<td>12:00-12:30</td>
<td>Lunch Break</td>
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<td>12:30-13:30</td>
<td>[Session 5: Invited Talk and Progress report by SHIREN YAMASHITA (30)]</td>
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<td>13:30-14:30</td>
<td>[Session 6: Invited Talk and Progress report by HAJIME MATSUI (30)]</td>
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<td>14:30-15:30</td>
<td>[Session 7: Invited Talk and Progress report by RAKU OKANOYA (30)]</td>
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<td>15:30-16:30</td>
<td>[Session 8: Invited Talk and Progress report by TOSHIYUKI MORIMURA (30)]</td>
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<td>16:30-17:30</td>
<td>[Session 9: Invited Talk and Progress report by FUMIHIRO OZANAN (20)]</td>
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<td>17:30-18:30</td>
<td>[Session 10: Invited Talk and Progress report by TOSHIYUKI KOMORI (30)]</td>
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<td>18:30-19:30</td>
<td>[Session 11: Invited Talk and Progress report by RAYMOND S. LUMBUENAMO (15)]</td>
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**Details:**
- **Registration:** 9:00-9:30
- **Session 4:** Invited Talk and Progress report by TOSHIO KURODA (20)
- **Session 5:** Invited Talk and Progress report by SHIREN YAMASHITA (30)
- **Session 6:** Invited Talk and Progress report by HAJIME MATSUI (30)
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- **Session 8:** Invited Talk and Progress report by TOSHIYUKI MORIMURA (30)
- **Session 9:** Invited Talk and Progress report by FUMIHIRO OZANAN (20)
- **Session 10:** Invited Talk and Progress report by TOSHIYUKI KOMORI (30)
- **Session 11:** Invited Talk and Progress report by RAYMOND S. LUMBUENAMO (15)

**Board Members/Participants:**
- Toshio Kuroda (20)
- Shiren Yamashita (30)
- Hajime Matsui (30)
- Raku Okanoya (30)
- Toshiyuki Komiya (30)
- Raymond S. Lumbuenanomo (15)
- Others
### Day 1: March 3rd (THU)

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<tr>
<td>13:00-13:10</td>
<td>Opening Remark</td>
<td>Tetsuro MATSUZAWA</td>
<td>PWS Program Coordinator</td>
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<td>Session 1: Recent News and Progress report by PWS Members and students (1) / Chair: Ikuma ADACHI</td>
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<td>13:10-14:10</td>
<td>O-1 Cooperation and competition among female bonobos</td>
<td>Takeshi FURUICHI</td>
<td>Primate Research Institute, Kyoto University</td>
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<td>O-2 Mixed species associations of guenons in the Kalinzu Forest and the report of the AA Seminar held in Kalinzu in August 2015</td>
<td>Chie HASHIMOTO</td>
<td>Primate Research Institute, Kyoto University</td>
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<td>13:10-14:10</td>
<td>O-3 Non-invasive DNA sampling of wild bonobos: progress report</td>
<td>Shintaro ISHIZUKA</td>
<td>Primate Research Institute, Kyoto University</td>
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<td>O-4 A sex difference of mother-offspring relationships in bonobo patrilineal societies</td>
<td>Kazuya TODA</td>
<td>Primate Research Institute, Kyoto University</td>
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<td>O-5 Mother-Infant Relationships of Wild Chimpanzees and Environmental Education Program in Kalinzu, Uganda</td>
<td>Natsumi ARUGA</td>
<td>Primate Research Institute, Kyoto University</td>
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<td>14:10-15:00</td>
<td>Session 2: Recent News and Progress report by PWS Members and students (2) / Chair: Naruki MORIMURA</td>
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<td>14:10-15:00</td>
<td>O-6 Environmental enrichment for zoo animals: from backyard to exhibition</td>
<td>Yumi YAMANASHI</td>
<td>Wildlife Research Center, Kyoto University</td>
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<td>O-7 The Rock-Paper-Scissors Game in Chimpanzees (Pan troglodytes)</td>
<td>Jie GAO</td>
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<td>O-8 Exploring attentional facilitation and disengagement to assess emotional states in captive chimpanzees: Progress Report</td>
<td>Duncan WILSON</td>
<td>Primate Research Institute, Kyoto University</td>
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<td>O-9 Influence of inter-individual distance on grooming interaction in captive chimpanzees and bonobos: research progress</td>
<td>Morgane ALLANIC</td>
<td>Primate Research Institute, Kyoto University</td>
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<td>Session 3: Invited Talk by PWS Collaborators / Chair: Reiko TAKIZAWA</td>
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<td>15:00-15:20</td>
<td>O-10 From the World Heritage to Non Protected Area - Recent Challenges on Biodiversity Conservation in Relation to Policy Framework</td>
<td>Naobi OKAYASU</td>
<td>WWF Japan / WRC Kyoto University</td>
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<td>O-11 Wildlife Habitat Fragmentation in the DRC</td>
<td>Raymond S. LUMBUENAMO</td>
<td>Wildlife Research Center, Kyoto University</td>
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<td>O-12</td>
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<td>Poverty Eradication vs Nature Conservation ~ For the Survival of this Planet</td>
<td>Masahiko HORIE</td>
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<td>O-13</td>
<td>(30)</td>
<td>Primate Conservation: What we know, what we do not know, and ways forward</td>
<td>Colin CHAPMAN</td>
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**Day 2**  
**March 4th (FRI)**

9:00-9:30  
Registration

**Session 4: Invited Talk and Progress report by PWS students (1) / Chair: Fred BERCOVITCH**

| O-14 | (20) | Electric fish as a model organism for behavioral research (and public exhibition). | José Alves GOMES | Laboratório de Fisiologia Comportamentale e Evolução (LFCE), Instituto Nacional de Pesquisas da Amazônia (INPA) |
| O-15 | (20) | Monkey for dinner? Bushmeat, urbanization and food security in the Amazon. | Tatiana SCHOR | Geography Federal University of Amazonas Center for Cities Study and Research in the Amazon -NEPECAB |
| O-16 | (10) | Local people’s knowledge and perceptions of bonobos in Wamba region, DR Congo | Aya YOKOTSUKA | Graduate School of Asian and African Area Studies, Kyoto University |
| O-17 | (20) | Diversification in white-sand vegetation in tropical south america – the case of the plant genus Pagamea (Rubiaceae) | Alberto VICENTINI | Instituto Nacional de Pesquisas da Amazônia (INPA) |
| O-18 | (10) | Comparative genome analysis on captive armadillos | Kei MATSUSHIMA | Wildlife Research Center, Kyoto University |

**Session 5: Invited Talk and Progress report by PWS students (2) / Chair: Takashi HAYAKAWA**

| O-19 | (20) | Research in Neotropical primates at the Nacional Primate Center, Brazil | Frederico Ozanan Barros MONTEIRI | Universidade Federal Rural da Amazônia (UFRA) |
| O-20 | (20) | Current threats, challenges and efforts for wildlife conservation in the Eastern Brazilian Amazon | Christina WHITEMAN | Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) |
| O-21 | (10) | Pair swim analysis of Indo-pacific bottlenose dolphin around Mikura island | Natsuko TAJIMA | Wildlife Research Center, Kyoto University |
| O-22 | (10) | Who approaches toward swimmers in wild dolphins? | Kasumi SAKAKIBARA | Wildlife Research Center, Kyoto University |
| O-23 | (10) | Report of Tanzania field tour ~ Nursing strategy of giraffe~ | Miho SAITO | Wildlife Research Center, Kyoto University |

**12:00-13:30**  
Lunch Break/ (ブッダセミナー 「環境省」 12:00-13:00)

**Session 6: Invited Talk and Progress report by PWS students (3) / Chair: Andrew MACINTOSH**

| O-24 | (20) | Bio-Logging: studying wildlife in the ocean from an 'animal’s-eye' view | Akinori TAKAHASHI | National Institute of Polar Research |
| O-25 | (20) | Human and Tibetan Macaque (Macaca thibetana) Interactions in the Valley of the Wild Monkeys, Huangshan, China | Lori SHEERAN | Department of Anthropology and Director of the Primate Behavior and Ecology Program, Central Washington University |
| O-26 | (20) | Molecular Approaches for Wildlife Conservation and Ecology: Amphibians and Primates Unite | Steve WAGNER | Department of Biological Sciences, Central Washington University |
| O-27 | (10) | Parasite sharing in sympatric Bornean primates | Liesbeth FRiAS | Primate Research Institute, Kyoto University |

13:30-15:30
| O-28 | Testing Infection-risk Avoidance in Primates | Cécile SARABIAN | Primate Research Institute, Kyoto University |
| O-29 | Farming the forest edge: local perception about primate conflict in six high altitude villages in the Garhwal Himalayas, Uttarakhand India | Himani NAUTIYAL | National Institute of Advanced Studies |
| O-30 | The evolutionary ecology of tusks in elephants | Raman SUKUMAR | Centre for Ecological Sciences, Indian Institute of Science |

**15:30-15:45**

**Coffee Break & Group Photo**

**15:45-16:00**

_**Special Talk by Juichi YAMAGIWA (President of Kyoto University)**_

"What I hope to the future of the fieldwork and PWS endeavor"

**Session 7: Progress Report by PWS Students (L4/L5) /Chair: Takushi KISHIDA**

| O-31 | Hair structures of leopard’s prey species in Mahale | Nobuko NAKAZAWA | Wildlife Research Center, Kyoto University |
| O-32 | Allomothering in wild chimpanzees of the Mahale Mountains National Park | Hiroko SAKURAGI | Wildlife Research Center, Kyoto University |
| O-33 | The Vocal Repertoire of Tibetan Macaques: A Quantitative Analysis and a Congeneric Comparison | Sofi BERNSTEIN | Primate Research Institute, Kyoto University |
| O-34 | Factors regulating steroid hormones in Japanese macaques and orangutans | Sayuri TAKESHITA | Primate Research Institute, Kyoto University |

**17:00-19:00**

**Poster session**

**Day 3**

**March 5th (SAT)**

**9:00-9:30**

**Registration**

**9:30-12:00**


Chair: Masaki TOMONAGA

| O-35 | Physical ethology of single-celled organism | Toshiyuki NAKAGAKI | Hokkaido University |
| O-36 | Domestication and song evolution in Bengalese finches | Kazuo OKANOYA | The University of Tokyo |
| O-37 | Great apes make anticipatory looks based on false beliefs | Fumihiro KANO | Wildlife Research Center, Kyoto University |
| O-38 | Evolutionarily predisposed snake fear: Comparative, Developmental, and Electrophysiological studies | Nobuyuki KAWAI | Nagoya University |
| O-39 | Comparative analysis of reinforcing property -Study on pleasure- | Shigeru WATANABE | Keio University |

**12:00-13:30**

**Lunch Break**

Chair: Misato HAYASHI

<p>| O-40 | Cross-modal correspondences in non-human primates | Ikuma ADACHI | Primate Research Institute, Kyoto University |
| O-41 | Rhythmic entrainment: Evolutionary origins of human bonding mechanism | Yuko HATTORI | Wildlife Research Center, Kyoto University |</p>
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<td>Orangutan Strategies for Solving a Visuospatial Memory Task</td>
<td>Chris MARTIN</td>
<td>Indianapolis Zoo</td>
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<td>15:30</td>
<td>Coffee Break</td>
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<td>15:30-</td>
<td>Launch of a new project to study wild horses in Portugal</td>
<td>Satoshi HIRATA</td>
<td>Wildlife Research Center, Kyoto University</td>
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<td>17:00</td>
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<td>18:00</td>
<td>Social Gathering</td>
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<td>17:00-</td>
<td>Exploring the perceptual world from the comparative-cognitive perspective</td>
<td>Masaki TOMONAGA</td>
<td>Primate Research Institute, Kyoto University</td>
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<td>18:00-</td>
<td>Dialectical perspective of Comparative Cognitive Science</td>
<td>Tetsuro MATSUZAWA</td>
<td>Primate Research Institute, Kyoto University</td>
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<td>Day 4</td>
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<td>9:00-9:30</td>
<td>Talk on cats and dogs: Comparative cognition in two of our best friends</td>
<td>Kazuo FUJITA</td>
<td>Graduate School of Letters, Kyoto University</td>
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<td>9:30-12:00</td>
<td>Comparative studies with chimpanzees and bonobos on cooperation in the wild and captivities</td>
<td>Shinya YAMAMOTO</td>
<td>Kobe University</td>
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<td>9:30-12:00</td>
<td>Conservation of wild chimpanzees at Bossou, Guinea</td>
<td>Naruki MORIMURA</td>
<td>Wildlife Research Center, Kyoto University</td>
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<td>9:30-12:00</td>
<td>Cognitive development and mother-infant interaction in great apes</td>
<td>Misato HAYASHI</td>
<td>Primate Research Institute, Kyoto University</td>
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<td>9:30-12:00</td>
<td>Modern Environmental Challenges to the Ecological Flexibility of Great Apes</td>
<td>Crickette SANZ</td>
<td>Washington University</td>
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<td>12:00-13:30</td>
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<td>13:30-14:00</td>
<td>Poster Award</td>
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<td>14:00-15:00</td>
<td>Emergence of Self Development of Social Cognition from Perinatal</td>
<td>Masako MYOWA-YAMAKOSHI</td>
<td>Graduate School of Education, Kyoto University</td>
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<td>14:00-15:00</td>
<td>Can we study emotions in animals?</td>
<td>Ralph ADOLPHS</td>
<td>California Institute of Technology</td>
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<td>14:00-15:00</td>
<td>Closing Remark (Tetsuro MATSUZAWA)</td>
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<td>Anna KAWAKITA</td>
<td>Long Term Study of Giraffes and My Vision for the Future in Tanzania and Japan</td>
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<td>Ryoma OTSUKA</td>
<td>Gorilla Conservation Through Photography and Filming</td>
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<td>Yuri KAWAGUCHI</td>
<td>Why do we love babies?: Perception of adult and infant faces in non-human primates</td>
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<td>Yugo KAWAMOTO</td>
<td>Towards a better understanding of the adaptation mechanism in taste receptors of primates</td>
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<td>Mayuko NOMOTO</td>
<td>Physique-related Factors in Provisioned Japanese Macaque and My Research Plan about Forest Elephant</td>
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<td>Miho TANAKA</td>
<td>Analysis and future of bite scars by cookie cutter sharks on wild indo–pacific bottlenose dolphins</td>
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<td>Masahiro YAMAGAMI</td>
<td>Study on thing arm throw action of the chimpanzee</td>
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<td>Hiroki OKAMURA</td>
<td>The Elucidation of Wild Bonobo’s Stress Factors</td>
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<td>Akiko TAKAHASHI</td>
<td>Changes in the vegetation of Koshima island under high feeding pressure by Japanese macaques</td>
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<td>Masayuki TANAKA</td>
<td>Research and education on Asian elephants in Kyoto City Zoo</td>
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<td>Tatiana SCHOR</td>
<td>Bushmeat prices and Hydrological System in the Tabatinga market, Amazonas, Brazil</td>
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<td>Himani NAUTIYAL</td>
<td>Winter diet selection and tree species preference by Central Himalayan Langur in and around Kedarnath Wildlife Sanctuary, Garhwal Himalayas, India</td>
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<td>Anna-Katharina LABOISSIERE</td>
<td>Conservation and wildlife management as an object for the humanities</td>
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<td>Hiroya TAKIYAMA</td>
<td>Chimpanzees(PAN TROGLODYTES), As in humans, Perceive Rhythm Better in Low Pitched Than High Pitched Sounds</td>
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<td>Maciej TROJAN</td>
<td>Chimpanzees do not use the tit-for-tat strategy during token exchanging in the prosocial paradigm tasks</td>
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<td>Maciej TROJAN</td>
<td>Various factors modify the prosocial behavior of chimpanzees in the prosocial paradigm tasks, but motor lateralization kills everything</td>
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<td>Julie DUBOSCOQ</td>
<td>Connecting the dots: linking host behaviour to pathogen transmission</td>
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<td>Renata MENDONÇA</td>
<td>Mother-offspring interactions before weaning and behavior of immature wild Bornean orangutans (Pongo pygmaeus morio) in Danum Valley</td>
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<td>Daisuke MURAMATSU</td>
<td>Bluffing and counter-bluffing tactics in fiddler crab contests</td>
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<td>Yukiko YAMAMOTO</td>
<td>Sound production and ontogenic change in the sound characteristics in the thorny catfish: Application for long-term underwater sound monitoring in Amazon</td>
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<td>Claire WATSON</td>
<td>Trying to make pellet diet tastier to marmosets</td>
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<td>Chloe GONSETH</td>
<td>Distance-specific referential signals in chimpanzees (Pan troglodytes)</td>
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<td>Raquel COSTA</td>
<td>From behavior observation to pattern identification: Preliminary results for personality in capuchin monkeys</td>
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<td>Yuta SHINTAKU</td>
<td>Reevaluation of primate specimen collection of Japan Monkey Centre as genetic resources</td>
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<td>Lucie RIGAILL</td>
<td>Face color indicates female reproductive state but not quality in Japanese macaques (Macaca fuscata).</td>
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<td>Kaori MIZUNO</td>
<td>Novel tasks for Asian elephants: Can they use their trunks to blow out-of-reach food against a wall?</td>
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<td>Hideyuki ITO</td>
<td>Mitochondrial DNA sequence diversity of Grevy’s zebra for management in captivity</td>
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<td>Zhijie LIAO</td>
<td>Investigation of social development of rhesus macaque by using social network analysis method</td>
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<td>Tomoko KANAMORI</td>
<td>Seasonal fluctuations of population density of Bornean orangutans (<em>Pongo pygmaeus morio</em>) with fruit availability in Danum Valley, Malaysia</td>
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<td>Hikaru WAKAMORI</td>
<td>Comparison of tail-buttocks region of three species of macaques, Macaca mulatta, M. leonina and M. assamensis</td>
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<td>Souta INOUE</td>
<td>Research of breeding behavior of Manta ray</td>
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<td>Study of wildlife ecology leading to conservation</td>
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<td>Akito TOUGE</td>
<td>The Evolutionary History of kousa dogwood (<em>Cornus kousa</em>): in terms of seed dispersal by animals</td>
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<td>LIU Jie</td>
<td>Ecology and Behavior Study on François’s langur (<em>Trachypithecus francoisi</em>) and Yunnan snub-nosed monkey (<em>Rhinopithecus bieti</em>)</td>
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<td>36</td>
<td>Nachiketha RAMAMURTHY</td>
<td>Population dynamics and vocal communication in Asian elephants</td>
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<td>37</td>
<td>Josue PASTRANA</td>
<td>Evaluating stress in male Japanese macaques living in two types of outdoor enclosures: vegetated vs. non-vegetated/PWS plan proposal</td>
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O-11 Invited Speaker

Addressing wildlife habitat fragmentation in the DR Congo through community effective involvement

Raymond S. Lumbuenamo

Changes in land use patterns are responsible not only for almost 20% GHG emission but are also the leading cause of habitat fragmentation, which in turn is one of the leading causes of species extinction. The reduction in fallow time, a consequence of an increasing demand for agricultural land driven by demographic explosion, has overextended the shifting cultivation production model in the DR Congo. The rural migration that has picked pace over the past three decades has exacerbated the situation by taking a big toll on forested areas nearing major roads and cities especially Kinshasa whose impact is felt hundreds of kilometers away, as more and more, new spans of forested areas are converted into farm land and cut for charcoal production.

Massive effects of habitat fragmentation have occurred in the Amazon and in other parts of the tropical forests of the world including Southeast Asia with major consequences on biodiversity erosion, e.g. the dramatic decline of tigers’ populations in Sumatra. In contrast, it is often believed that Africa has been spared, probably because deforestation in the Congo Basin still occurs at smaller scales, to supply nearby cities in charcoal or cultivated products.

However, the effects of global changes have become more visible as scientists have developed new methods to quantify and map deforestation and predict their consequences. It is now clear that pressure is mounting, as population, urbanization, industrial agriculture (land grabbing) and mining activities are increasing. The situation could change rapidly and the coming years will be critical for forest resources of the Congo Basin.

It is therefore imperative that these perceived trends be curbed by tackling the problem at its roots: the land use and the production system by the communities.
O-13 Invited Speaker

Primate Conservation: What we know, what we do not know, and ways forward

Colin Chapman

Dept. of Anthropology and McGill School of Environment, McGill University

The world is changing rapidly and on September 30th, 2014 the World Wildlife Fund announced that the world had lost 52% of its biodiversity. Primate species may also have been lost and it is estimated that close to 50% of the world’s primates are at risk of extinction, with 11% critically endangered. The rapid disappearance of tropical forests, the potential impacts of climate change, and the increasing threats to wildlife, makes it imperative that we quantify and better understand wildlife population dynamics. With long-lived animals this requires extensive, long-term data. Here I present data that spans up to 45 years at eight sites to document changes in monkey abundance in Kibale National Park, Uganda. The primates show a complex pattern of change that is dependent on site and species, but all species, except blue monkeys, have colonized extensive areas of regenerating forest, indicating that park-wide populations have been increasing since 1996 census. We consider these changes with respect to forest dynamics, climate change, and disease and evaluate the importance of these factors on global primate populations. While statistics on deforestation and primate population endangerment are grim, there have recently been positive conservation gains globally and, as an illustration of conservation methods and outcomes, I discuss the conservation efforts around Kibale National Park, Uganda.

O-14 Invited Speaker

**Electric fish as a model organism for behavioral research**

*(and public exhibition)*

José A. Alves-Gomes

Laboratório de Fisiologia Comportamental e Evolução (LFCE), Instituto Nacional de Pesquisas da Amazônia (INPA)

The South American electric fish (Order Gymnotiformes) possess, among their principal diagnostic features, a specialized electrogenic tissue, an electric organ, that generates discharges continually, since from several hours after hatching throughout their entire lives. Concomitantly, the gymnotiforms also have, embedded in their skin, a collection of specialized electroreceptor organs, which monitor the strength (amplitude) and the timing (phase) of the electrical field generated by their electric organ, in the space surrounding the fish. Any type of interference in the otherwise normal pattern of the electric field detected by the array of electroreceptors may become relevant information, as it can imply prey or predator, large or small, soft or hard, fast or slow, or a conspecific male or female. Because the electric organ discharges (EODs) are so vital for the fish, EOD waveforms and their possible variations are of utmost evolutionary relevance, as they become key elements for co-specifics’ recognition, sexual selection, reproductive isolation, agonistic interactions, hierarchical settlements, as well as to broadcast internal physiological states, gender and ontogenetic stages. Electrodes placed in the water near the fish can easily capture the EODs of individual fish and the electric signal can be digitized and subsequently visualized at an oscilloscope screen, or played as a sound through a loudspeaker. As consequence, we can “see” and “hear” the EODs of the different species, in real time. This possibility allows us to envision several opportunities to utilize these fish to capture the interest and the curiosity of visitors in scientific exhibitions and museums. Our laboratory in the Amazon has been interested in several aspects of the evolutionary biology of electric fish, from molecular systematics, to biogeography, to behavioral physiology. We also use the electric fish as a biosensor do infer about water quality, once these fish change their EODs’ pattern according to physic-chemical status of the water. In this Symposium I will describe our current research interests on electric fish in the Amazon and present a compiled review of our most recent discoveries in each respective field.
Monkey for dinner?

Bushmeat, urbanization and food security in the Amazon

Tatiana Schor

Geography Federal University of Amazonas
Center for Cities Study and Research in the Amazon -NEPECAB

Bushmeat is a meal in the Brazilian Amazon and primates are part of the menu. Access to natural resources such as bushmeat is an important aspect not only in terms of food diversity but also in terms of culture. Prohibition and law enforcement are insufficient to stop consumption of wild mammals such as primates. The consumption of bushmeat happens not only in community context but is present in local markets of small and medium sized cities. Population growth and agglomeration in cities, especially in the western part of the Brazilian Amazon-Amazonas State, has put pressure on wildlife. It is necessary to understand the market structure and cultural aspects in the contemporary urbanization process in the Amazon in order to build robust conservation politics. To do so we have investigated bushmeat market structure in the Brazil-Colombia-Peru border and in small towns along the Solimoes rivers relating quantity, price, species, hydrology and alimentary habits. Our results have shown that bushmeat market is strongly related to the hydrological system, to the fish market, to cultural habits more than to food security. The monetarization of social relations has permitted the consolidation of bushmeat market in the Amazonian cities. The focus of the talk will be to present the results and open the debate on wildlife conservation in a context of bushmeat consumption.
O-17 Invited Speaker

**Diversification in white-sand vegetation in tropical South America – the case of the plant genus *Pagamea* (Rubiaceae)**

Alberto Vicentini

Instituto Nacional de Pesquisas da Amazônia

The flora of the Guiana Shield contains several plant lineages that are restricted to white-sand vegetation, some of which are widespread in tropical South America. Here, the history of diversification of one of these lineages, the genus *Pagamea* (Rubiaceae), is reconstructed through phylogenetic hypotheses. Data from chloroplast (rps16 and rpl20-rps12) and nuclear (ITS) markers were incongruent, with ITS found to be more consistent with morphological criteria to delimit species. Reconstruction of the ancestral area for the genus was ambiguous, with both the western Guiana Shield and the Atlantic coastal areas containing early divergent lineages, but most speciation events appeared to have happened in the western Guiana Shield where most extant diversity is present. Dispersal events into the western Amazon and the Andes (1.5-4.5Ma) and the eastern Guiana Shield (0.4-2.2Ma) were followed by speciation events in these regions. Dispersal events between the Amazon and Atlantic rainforest occurred at least three times independently. However, dispersals into new areas were limited, and most regions were found to be phylogenetically clustered. Altitudinal and habitat shifts happened multiple times independently, but ecological traits were found to be phylogenetically conserved, implying that such shifts were not the cause of lineage divergence. The result that most speciation events happened in the western Guiana Shield, where white-sand habitats predominate in both lowlands and highlands, and which has been less affected by Pleistocene climatic change, coupled with the result that ecological traits are phylogenetically conserved, suggests that the diversification of *Pagamea* may have been related primarily to the patchy distribution of white-sand vegetation.
Bio-Logging: studying wildlife in the ocean from an ‘animal’s-eye’ view

Akinori Takahashi

National Institute of Polar Research

The fundamental approach to studying wildlife is the detailed direct observation of the study species. However, the direct observation of free-ranging animals is not always easy in their natural environment. This is especially the case for marine animals, which range widely over the open ocean and dive to great depths. To overcome the challenge of observing free-ranging marine animals, the National Institute of Polar Research has devoted its major effort toward the development of ‘bio-logging’. This approach uses small instruments (such as accelerometers or GPS recorders) that can be attached on animals to record their behaviour while moving freely. Now, the diversification and miniaturization of bio-logging instruments offers unique opportunities to study various biological aspects of wildlife in the ocean. Especially, recent developments in camera/video recorders open up new opportunities to study not only the behaviour, but also an animal’s surrounding environment from an ‘animal’s-eye’ view. This enables us to integrate the behaviour and ecology of animals into its environmental/social context. I report such examples from our recent work on the foraging behaviour of penguins, which aims to better understand the effects of climate and marine environmental changes on Antarctic wildlife.
O-25 Invited Speaker

Human and Tibetan Macaque (Macaca thibetana) Interactions in the Valley of the Wild Monkeys, Huangshan, China

Lori K. Sheeran

Department of Anthropology and Museum Studies and Primate Behavior and Ecology Program, Central Washington University

For 30 years, primatologists have studied Tibetan macaques at the Valley of the Wild Monkeys, Mt. Huangshan, China. These combined data have yielded insights into the species’ ecology, behavior, and evolution. This talk highlights findings from the past 12 years of collaborative, international fieldwork focused on human-monkey interactions at this macaque tourism site. In the 1990s park staff designed provisioning and tourism programs intended to limit visitors’ opportunities to interact with monkeys and to encourage monkeys’ “natural” foraging and ranging behaviors. Our data collected from monkeys, visitors, and park staff indicate that some management methods are ineffective with respect to visitor safety, and range restriction practices curtail monkeys’ foraging and grooming patterns. The site layout intensifies macaque aggression and stress, particularly in one provisioning area that is flanked on two sides by visitors. Visitors largely ignore park staff’s admonitions against feeding monkeys, and park signage is ineffective in regulating visitor behaviors or informing visitors about ways to reduce negative interactions with monkeys. The majority of macaque-human interaction sequences in our dataset are instigated by visitors and are prolonged by their tendency to mimic monkeys’ threat behaviors, thereby escalating the intensity of the interspecies interaction, sometimes to the point of attack by the monkeys. Immature monkeys are sometimes the recipients of redirected adult male monkey aggression, particularly in the provisioning area where visitors most frequently provide monkeys with small quantities of nutrient-dense foods such as chips, candy, nuts, and fruit. Opportunities exist to better manage visitors’ behaviors and to improve what visitors learn about this monkey species and other wildlife. Implementation and monitoring of our recommendations may reduce the likelihood of negative encounters between visitors and aggressive monkeys, while reducing monkeys’ stress levels and facilitating more species-typical behaviors.
We use a variety of molecular approaches to address ecological and conservation questions. We have developed a number of non-invasive sampling methods that take advantage of quantitative and traditional PCR for detection of species-specific markers from DNA found in the environment (eDNA). We have employed these techniques to investigate pathogens of amphibians as well as distribution and occupancy of amphibians. In addition, we have taken an eDNA approach to understand primate distribution and occupancy of New World primates by the sampling of plants putatively chewed by primates. Further, we have been using High-throughput DNA sequencing to understand the microbiome of primates and their potential for transference of bacteria to among congeneres and other taxa. Maintenance of a species core microbiome may be important for individual long-term health and survival.
Tusk is sexually monomorphic in the proboscideans that are ancestral to both the African elephant *Loxodonta africana* and Asian elephant *Elephas maximus*. Tusk continues to remain monomorphic in the African elephant but has become sexually dimorphic in the Asian elephant. Fisher proposed that sexually selected male display traits originate in both the sexes but are suppressed in the females by modifier genes, when the trait becomes deleterious to females. Thus, sexually antagonistic selection on a trait and sex-specific gene expression can lead to the evolution of sexual dimorphism. Tusk, therefore could be a sexually selected male trait that evolved according to the Fisherian model. Intriguingly, tuskless males occur at very high frequencies in some Asian elephant populations. The tusked and tuskless male morphs could be alternate male mating strategies, occurring at evolutionarily stable frequencies. Alternatively, the observed male tusk dimorphism, could be a consequence of artificial selection against tusked individuals, due to selective hunting of tusked males. Furthermore, male African elephants are more intensely poached for ivory than female elephants. Yet the frequency of tuskless individuals has increased more rapidly among females than in male African elephants. In essence, sexual dimorphism could be evolving among such poached populations. Empirical studies in an Asian elephant population also found that expression of musth in male elephants was a more important determinant of female choice as compared to possession of tusks. In this talk we discuss the evolutionary ecology of tusks in elephants, shaped through a combination of natural selection, sexual selection and artificial selection.
O-35 Invited Speaker

**Physical ethology of single-celled organism**

Toshiyuki Nakagaki  
Hokkaido University

We report here that ability of information processing in single-celled organisms like amoebae (Physarum) and ciliates (Paramecium) is higher than we had thought. Physarum amoeba found the optimal path when it obtained the multiple locations of food. A simple mathematical model for the path finding was proposed in terms of differential equations. As well as the path-finding ability, the organism was able to anticipate the next timing of periodic climate change after experienced some periodic changes of climate, and to show a kind of behaviors that seemed to be 'indicisive' when it encountered the presence of a chemical repellent, quinine. We indicated that a simple dynamics was enough to reproduce these observed behaviors. Mathematical modeling is helpful to understand the mechanism of behavioral smartness in slime mold. Capacity of memory and learning was also studied in ciliate, another major group of single-celled organism. We propose 'physical ethology' of cell.
O-42 Invited Speaker

**Orangutan Strategies for Solving a Visuospatial Memory Task**

Christopher Martin

*Indianapolis Zoo*

The popular game known as Concentration, in which players search for matching pairs among a grid of face-down cards, provides a robust platform for examining visuospatial memory in a simple, nonverbal way. Orangutans (n=5) at the Indianapolis Zoo were given a modified version of the Concentration Game in which three cards were shown face-down on a computer screen, two of which matched each other while the third was a foil. Subjects overturned two cards at a time by touching them, with trials terminating in a food reward if the overturned cards matched, or reverting to their face-down position if they did not. A constraint was experimentally imposed on the game whereby the first two cards touched would never match, resulting in an optimal search strategy composed of touching the first two cards, followed by the third, followed by the card among the first two cards that matched the third. Findings showed that three of five subjects utilized the optimal search strategy more often than would be expected by chance, but also perseverated on specific patterns of choice sequences rather than flexibly adjusting behavior from trial to trial to minimize the overall number of card flips. The observed tendency of orangutans to rely on a prescriptive choice strategy instead of adaptively updating their solution in light of evidential developments is consistent with findings from prior studies on orangutan strategies for solving invisible displacement tasks.
O-50 Invited Speaker

**Modern Environmental Challenges to the Ecological Flexibility of Great Apes**

Crickette Sanz, David Morgan

Washington University in St. Louis

Great apes have a long evolutionary history of adjusting to fluctuating environments, but basic questions remain as to how gorillas and chimpanzees cope with modern environmental disturbances such as mechanized logging. Most studies of apes and forestry have compared areas with different logging histories, rather than documenting the responses of local ape populations to timber extraction as it occurs. In this study, we documented the arrival, progression, and departure of mechanized logging activities in an active forestry concession in northern Republic of Congo. Our aim was to not only document the impacts of logging on sympatric gorilla and chimpanzee populations, but also to determine the factors driving their abundance in the region. This was accomplished by surveying ape nests and human signs encountered along line transects over the course of an eight year study. A total of 12,467 ape nests were detected over 1,068 km of transects, and complemented by information on ape ecology from our ongoing study of habituated apes and tree distribution from forestry inventories. We found that abundance of chimpanzee nests was predicted by human impacts and feeding trees, and that gorilla abundance was predicted by stage of logging and heterogeneity of vegetation. Chimpanzees shifted away from forestry activities to nearby “refuge areas” of lower human disturbance, whereas gorillas were attracted to the dense undergrowth of previously logged forests. We also detected an enduring legacy of logging impacts on ape habitats and nesting. Together, these results demonstrate the importance of the ecological flexibility and advanced cognitive capacities of great apes in coping with environmental disturbance. However, the diverse community of primates residing in the Congo Basin are facing a myriad of threats to their long-term survival for which there is no historical precedent. Results of this research and additional field studies are being used to develop evidence-based conservation initiatives to mitigate these threats and ensure the preservation of our closest living relatives.
Can we study emotions in animals?

Ralph Adolphs

California Institute of Technology

In his seminal book, "The expression of the emotions in man and animals," Charles Darwin argued for apparent homologies between the emotions of humans and those of many other mammals, inferred from their behavioral expressions. However, some current views in psychology and neuroscience argue that we should not scientifically apply the word "emotion" to nonhuman animals at all. I disagree with this latter view, and will provide an initial sketch of emotions that considers them as functional states applicable to all complex animals. An essential part of this view is the need for strong distinctions between emotions, their behavioral expression, and their conscious experience. Another essential part of this view is the need for comparative studies across different species, in order to glean the general functional principles that characterize emotions.
Map of Inuyama
Introduction to the Program

Leading Graduate Program in Primatology and Wildlife Science (PWS)

While working towards Kyoto University’s mission statement of the well-being of the world, the Leading Graduate Program in Primatology and Wildlife Science (PWS) strives for many other goals. This program also aims to foster the type of individual that will have the ability to make quick judgement of one’s environment, the ability to design the future of global society, while all at the same time nurture a leader-type of individual who will be indispensable for overseas expansion.

(Japanese) primatology originated from Japan, and plays a big role in leading this unique academic study to the world. During the recent years, an emerging field of academic study called “Wildlife Science” that targets endangered species has been on the verge of establishment. With fieldwork as its foundation, a comprehensive understanding of the human mind, body, life and genome, as well as engaging in hands-on activities that aims for a “the well-being of the world” are all vital to this establishment.

While being the front line of an academic field, in Japan this field has a shortage of three important careers that is not lacking in the West. (1) Conservation specialists of international organization(s) such as the United nations and NGO; (2) Curators of museums, zoos, aquariums, and the like, as well as one that can develop and/or expand a museum or zoo as a “field museum” in a specific habitat; and (3) Outreach workers that invests a great length of time in outreach activities in a specific countries and societies. While providing a foundation for new research, education and hands-on experience, this program aims to nurture a global leader that interconnects this academic field and one’s accomplishments.

For further details on the program, please refer to our HP (http://www.wildlife-science.org/)

The curriculum of a practitioner that acquired “internationality”

- Hands-on fieldwork
- Domestic fieldwork
- International fieldwork
- Acquiring the skills / Knowledge that becomes the foundation for fieldwork
- Relationship with International Organizations
- Training at domestic facilities
- Language Learning

To enhance a connection with the next generation by creating an organization that facilitates a mutual relationship

- Conservation specialists of international organization(s) such as the United Nations and NGO
  - Significant international contributions: Produce an individual that acquires expertise, high linguistic skills, and experience in fieldwork

- Curator (Zoo, Museum, Aquarium, and the like)
  - (Ph.D. level curator)
  - A career path in specialized knowledge, demonstrating one’s experiences, and contributing to society

- Outreach workers investing a great length of time in outreach activities in a specific countries and societies
  - Expanding Kyoto University’s tradition: Identifying the needs through on-site field of view; a leader who can propose significant contributions to Japan

Facilities for International Collaborations

We have field stations in 3 of the largest tropical rain forest (Amazon, Congo, Borneo)

Domestic Facilities for Fieldwork Courses

The enrollment process of the Leading Graduate Program

The Leading Graduate Program in Primatology and Wildlife Science (PWS) is a 5-year program. Students approved to join the PWS program from their first year of Master’s program will progress from L1, L2, L3, L4, L5, and will complete the program in 5 years. The PWS program is completed by students parallel to their existing Kyoto University master’s and doctoral programs. Therefore, students do not need to change their supervisor or section/laboratory to join PWS. However, there are two necessary conditions for eligibility:

1. A graduate student of Kyoto University: It is required to become a graduate student of the Division of Biological Science, Graduate School of Science (Kyoto University). However, we are in the process of adjustment for students of other graduate departments to enroll in our program, so please do not hesitate to inquire.

2. To apply and receive approval to enroll into our program: The process is the same for both Japanese natives and foreign students. Eligible students: 1st year Master’s students (will be called L1 student), or a doctoral students (will be called L3 student). Annually, we will disclose the guidelines for applicants in mid-January, and administer the entrance exam in the beginning of March.
The following shows the curriculum and schedule that the Leading Graduate Program in Primatology and Wildlife Science offer. Credits obtained through the mandatory courses can also be used as credit for Graduate School of Science, Kyoto University.

NOTE: Course schedules are subject to change. For more information, refer to the following site: http://www.wildlife-science.org/en/curriculum/

Please contact the following e-mail address for any questions about the curriculum of PWS: info@wildlife-science.org

mandATORY COURSES (corresponds to Master course)

Interdepartmental Exchange “Inter-lab”
To obtain a general idea of the diverse areas of study in the Division of Biological Science, Kyoto University. Visit the following facilities in succession: Kyoto City Zoo, Center for Ecological Research (KU), Research Reactor Institute (KU), Seto Marine Biological Laboratory (KU), Primate Research Institute (KU), Japan Monkey Centre.

Animal Welfare Course: TBD - Chimpanzees & Horses (Primate experimentation and behavioral cognitive science. Understand the comparative cognitive brain. Required to develop independent research topic (e.g., identification of food items in food caches).

Prior: Apr. 24th-30th, 2016
WRC: May 5th-11th, 2016

KOSHIMA Field Science Course
To learn about primatology. Conduct observation on wild Japanese macaques (protected species) in Koshima, the birthplace of Japanese primatology. Required to develop independent research topic (e.g., identification of food items in food caches).

PRI: Apr. 24th-30th, 2016

YAKUSHIMA Field Science Course
To learn the basic of wildlife research. Conduct fieldwork on animals/plants in Yakushima, a UNESCO World Heritage Site. English is the official language in this course to facilitate exchange of ideas with international participants, e.g., from Tanzania, India, Malaysia and elsewhere. Samples collected during the course will be used in the following Genome Science Course.

Spring: May 21st-27th, 2016
Fall: Oct. 19th-22nd, 2016

Genome Science Course
Complementary to the Yakushima Field Science Course. Designed for participants who expect to engage in both laboratory work and fieldwork. Beginner (direct sequencing) and advanced (next generation sequencing) courses are available. English is the official language as in the previous course. The samples from Yakushima will be used to perform various experiments and analyses. Students give a poster presentation at the international symposium scheduled on the last day of this course.

Spring: May 30th-Jun. 3rd, 2016
Fall: Oct. 24th-28th, 2016

Zoo/Museum Course
To obtain practical experience in environmental education in the field of primatology/wildlife science as well as to learn to work as a curator, one of the three exit points of the PWS program. This course provides lectures by zoo technicians and practical training as zokeepers.
Place: Japan Monkey Centre
Spring: TBD (June, 2016)
Fall: TBD (February or March, 2017)

LONG-TERM INTERNSHIP TRAININGS (corresponds to Doctoral course)

Conservation Biology Internship Training
UN-related organizations and NGOs

Animal Welfare Internship Training
Museums, Zoos and Aquariums

Social Outreach Internship Training
Outreach activities in specific countries and societies

Buddha Seminar
Lectures from researchers, government officials from the United Kingdom, Congo, Brazil, Butan, etc., Official language: English

Asura International Seminar
Lectures from researchers, government officials from the United Kingdom, Congo, Brazil, Butan, etc., Official language: English

The International Symposiums on Primatology and Wildlife Science
- The 1st: Mar. 06-08, 2014
- The 2nd: Aug. 29-30, 2014
- The 3rd: Mar. 05-08, 2015
- The 4th: Jul. 21-22, 2015
- The 5th: Mar. 03-06, 2016
- The 7th: TBD (March, 2017)

LANGUAGE LEARNING
“Self-Study Paradigm”
Hands-on Experience through Fieldwork

Students are required to become proficient in at least one foreign language in addition to their native language. English is required for all students whose native language is not English. International students whose native language is English are required to master another language of their choice. Students are also strongly recommended to learn a second foreign language.

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