

**Research Activity Report**  
**Supported by “Leading Graduate Program in Primatology and Wildlife Science”**  
 (Please be sure to submit this report after the trip that supported by PWS.)

	2015. 11,01
<b>Affiliation/Position</b>	Primate Research Institute/D3
<b>Name</b>	Sofi Bernstein

<b>1. Country/location of visit</b>
Yakushima Island, Kagoshima Prefecture, Japan
<b>2. Research project</b>
Yakushima Field Course and Genome Science Course (Species composition and phenology in fern gametophyte)
<b>3. Date (departing from/returning to Japan)</b>
2015. 10. 18 – 2015. 10. 24 (7 days), 2015.10.26- 2015.10.30 (5 days)
<b>4. Main host researcher and affiliation</b>
Dr. Hanya, Dr. Yumoto, and Dr. Kudoh (Kyoto University), and Dr. Shinohara (Kagawa University)
<b>5. Progress and results of your research/activity</b> (You can attach extra pages if needed)
Please insert one or more pictures (to be publicly released). Below each picture, please provide a brief description.
<p><b>Yakushima Field Course</b></p> <p>This course was an incredible opportunity to travel to Yakushima island, a UNESCO world heritage site. I have heard many wonderful stories about this island from researchers, and was eager to visit such a special place. I was assigned part of the plant team, and this gave me a good opportunity to research something outside of the scope of my usual research topics. Our team leaders were Professors Shinohara and Kudoh, and on the first day (October 19<sup>th</sup>) we met and they introduced us to our research topic, exploring the species diversity of ferns. Ferns have two independent generations, the gametophyte and the sporophyte, therefore we would need to collect samples of both types to get an accurate census of the species diversity. The professors also told us that our team would be the first to collect gametophyte samples in Autumn in Yakushima.</p> <p>Our study period was divided into three days collecting samples from three separate river basins; Miyannoura, Onna, and Hanaage. Each day we individually collected tiny gametophyte samples (~.5-1 cm) upon careful inspection of rocky surfaces and tree trunks, while Professor Shinohara collected sporophyte samples. After the three days of data collection we identified the species of sporophytes collected and differentiated between cordiform (heart-shaped) and non-cordiform (ribbon shaped) gametophytes via microscope. Then we started preparing our presentation to sum up our study thus far.</p> <p><b>Genome Science Course</b></p> <p>We were able to identify the sporophyte samples through morphological identification, however it is not possible to identify species of gametophyte through morphology alone. To address this problem, we tried to identify the species or genera using molecular analysis. We extracted DNA from the samples and determined the rbcL gene sequences from them. This gene has been identified as an invaluable region for species identification in ferns due to the high rate of mutations. After extraction of the DNA and subsequent PCR, electrophoresis, cycle sequencing, and the application of samples to the genetic analyzer, we edited the raw sequence data and searched for matching sequences in BLAST. On the last day of the genome course the team summarized the findings and delegated sections of the report in order to prepare for the final presentation on November 5<sup>th</sup>.</p> <p>This course was a great opportunity to learn many new techniques, and visit a very special research site for both primatologists and botanists in Japan. I am very grateful for the experiences I had, and the kindness of the host professors, fellow students, and local people of Yakushima.</p>
<b>6. Others</b>

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The new PWS field station in Yakushima.



Monkey crossing!



Beautiful sunset by the beach in front of the station.



Dr. Shinohara collects sporophyte samples.

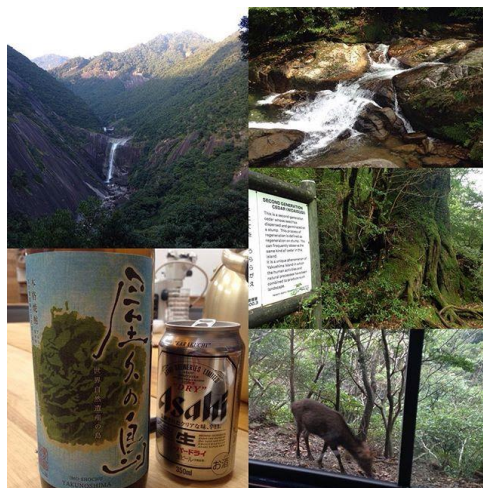
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View from above the second site,  
Miyannoura.



Relaxing at the onsen after collecting  
samples.



Beautiful scenery, deers, and local  
shochu in Yakushima Island.