

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.)

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Affiliation/Position	Bogor Agricultural University/D1
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1. Country/location of visit
Japan/ Yakushima Island in Kagoshima prefecture, Japan
2. Research project
Yakushima Field Science Course, Gastrointestinal parasites of mammals in Yakushima (Parasites of Wild Deer and Rodents in Yakushima: Identity, Abundance and Distribution)
3. Date (departing from/returning to Japan)
2017.05.13 – 2017. 05. 19 (7 days)
4. Main host researcher and affiliation
Dr. Munehiro Okamoto, Dr. Akiko Sawada, Dr. Takakazu Yumoto(Primate Research Institute), Dr. Nariaki Nonaka (University of Miyazaki)
5. Progress and results of your research/activity (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>During Yakushima Field Science Course, I was belong to Parasite Group. My team conducted research about exo-parasites and endo-parasites in wild Yakushima deer (<i>Cervus nippon yakushimae</i>) and wild rodents (<i>Apodemus argenteus</i>). In addition, we examined parasites lived at the surface of grass which suspected to be parasites in deer.</p> <p>On the first day, 13th May, we gathered in Demachiyangi station, Kyoto to catch a shuttle bus to go to Osaka Itami Airport. We departed around 10:15 and arrived at Yakushima Airport around 12:00. At the airport, we met Dr Goro Hanya, Dr Hiroshi Kudoh and Dr Takakazu Yumoto and they took us to lunch. After lunch, we went to PWS station in Nagata village. While waiting for dinner, we walked a little bit to the nature park and the lecturers explained about the plants, monkeys and deer that live there. We had dinner in the PWS station followed by self-introduction. After that, we were discussed about the plan during our course with our team. Parasite team consisted of 5 students, me, Raquel, Shibata, Naoto and Upasana that advised by Dr Munehiro Okamoto, Dr Nariaki Nonaka, Dr Akiko Sawada and Dr Takakazu Yumoto. Dr Nariaki Nonaka gave us brief explanation to collect internal parasites in cattle and rodents followed by methods to get external parasites. There is no report for parasites in deer and rodents especially those that lived in Yakushima. Our finding will give valuable data in this research field. After briefing, we moved to laboratory to make tools to picking parasites (nematodes) using pin and chopstick.</p> <p>On 14th of April, we examined the viscera of one deer (deer 1) purchased from local slaughter house. First, Dr Nariaki Nonaka introduced us how to separate the organs and also the name of each organ. We divide the organs to lungs,oesophagus and trachea; abomasum, omasum and reticulum; rumen; large intestine; and small intestine. We cut open the organs and collected the content of abomasum, small intestine and large intestine while for rumen we discarded the content. To find the internal parasites we carefully examined the inner surface of those organs after washed them with saline water. For lung, we cut it into pieces (1cmx1cmx1cm) and soaked it in saline water and incubated it for several hours. In deer 1, Naoto found internal parasites (nematodes) from lung and large intestine while Upasana found</p>

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parasites from abomasum. For the contents of organs, we filtered it using metal mesh with various number of mesh then we examined the trapped materials by eye. Then, we added saline water to collecting the trapped materials to a beaker and performed simple sedimentation. Finally, we discard the supernatant and dilute it to 1/10 and examined the contents of sediment by stereomicroscope. Around noon, Dr. Munehiro Okamoto got call from slaughter house and we all went to slaughter house to see slaughter process. At slaughter house we observed the process of slaughtering and preparing carcass of three deer. In addition of internal organs, we also collected exoparasites (ticks and ked) from skin surface of deer 4 and 5. After came back to station, we took lunch in the beach next to the station. In afternoon, we continued to treat threat internal organs of deer 2 and examine it, but we did not find any parasites.

On 15th May, we continued to examine the internal organs of deer 3, 4 and 5. From those three deer, we found only one nematodes from the lung of deer 5. That was observed by me. At that day, we are very tired because we have to dissecting and filtering many organs. That day, the lecturers took us to Yoggo Valley to have a lunch and took some rest. It was relaxing. At the end of the day, we were so proud, we can finished internal parasites examination for deer. At 16th May, we went to Yodogawa trail to set rodent trap. We were stopped three time during our trip to collecting ticks from the vegetation using white clothes. We dragged the clothes in lower surface of the vegetation to collect insects especially ticks. Because in the life cycle of ticks, they will wait to invade the host in the surface of the leaves. Arrived at Yodogawa, the lecturers explained to us how to set the trap. Each of us got 10 trap to set, in total 50 traps. We used peanuts and sunflower seed as the bait to attract the rodents. I went to set the trap wit Dr Nariaki Nonaka, he explained how to place the trap. Then, he asked me to imagine the track of the rodents so we could place the trap at best location. After setting the trap, we go to Yakusugi Nature Park and went back to the station to examine the ticks from deer and vegetation (plants).

On 17th May, we went back to Yodogawa trail to collecting the trap. We got 11 trapped rodents and was identified as *Apodemus argenteus*. There is no tendency that rodents prefer to choose specific bait. We collected ticks, perianal swab (using scotchtape method) and fecal sample of the rodents to identify the parasites. We also recorded the individual identity as sex and age of each rodents. After that, we came back to the laboratory to analyze the data. We found only one genus, *Ixodes*, lived as exoparasite in rodents. For internal parsites, we found three types of nematodes, one protozoa and one tapeworm (cestode). After dinner, we came back to laboratory to make presentation of our result. We made introduction, methods and listing of result part.

On 18th, we were stayed all day long in laboratory to finishing our presentation. We worked effectively by shared the documents and edited online using Google drive. At 15:00 we had final presentation for Yakushima field course. All participants which divided into 3 groups: Parasite, Monkey and Deer, and Plants were presented the result. Parasite tem divide the presentation as follow: Naoto did introduction part, me and Shibata presented methods, Upasana explained about result and a brief discussion was given by Raquel. We nailed some interesting findings: 1.The low internal parasite infection on deer might cause by the tendency that Southern sika deer are browser type (Takatsuki 2009) so they do not feed in grass that infested by nematode eggs. 2. Only nymph of *Ixodes* that found as exoparasites (ticks) in rodents, the adults might prefer to larger animal. 3. The presence of tapeworm in rodents lead to the possibility that insect (eating by rodents) may be the intermediate host for tapeworm. 4. There are tendency of xoparasite (ticks) distribution in Yakushima, lower altitude is occupied by *Haemaphysalis* whether higher altitude is for *Ixodes*. Our data still need more supportive analysis to explain those phenomenon. After field course we will join Genome course to deepen our analysis.

Besides the activities I mention above, we enjoyed the beautiful scenery of Yakushima such as big and old cedar three in

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Shiratani and Yakusugi Nature reserve area, beautiful Yoggo valley and Ohko-no-Taki waterfall, tracking a little bit in Yodogawa mountain trail. I pretty much love delicious foods prepared by locals and barbeque party as the closing ceremony. I amazed by beautiful sunsets and thousand stars and mesmerized to watching the lay eggs in the midnight. It was memorable to stay 7 days in Yakushima station. Overall, I greatly enjoyed the field course and had an impressive experience with all my new friends and lecturers. During this field course, we learnt new skill and scientific work, did great teamwork, help each other, and enjoyed every moments to the fullest.



Examine viscera of deer



Collecting ticks from vegetation



Lung worm examined by me



Observed tick using stereomicroscope



Collecting fecal samples from rodents



Group photo: Parasite team

6. Others

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I would like to express my gratitude to all organizing committee, staffs and researchers for their support. Especially thank Dr. Munehiro Okamoto, Dr. Nariaki Nonaka, Dr. Akiko Sawada, Dr Takakazu Yumoto, Mr Miura Higo and my Parasite team for great help in the research and daily life. Thank all lecturers and students for their help and support during the course. I also want to express my gratitude to PWS and CET-Bio for organization and financial support.