

Field Science Course and Advanced Laboratory Course in 2020 Fall

1.1 Outline

The “Field Science Course” aims to train students in fieldwork at the UNESCO World Natural Heritage Site on Yakushima Island, Japan. Young students and scientists from abroad and graduate students at Kyoto University attend the course together, using English as the official language.

The “Advanced Laboratory Course” aims to train students in laboratory protocols, which is increasingly useful for field biologists. In this course, samples collected in the preceding “Field Science Course” will be analyzed, as far as possible given the contents of the field course. Students can choose among topics covered which they feel is most suitable to their interests and prior experience in the laboratory. Through these two courses, students will experience the process of scientific field research, sampling in the field, analyzing samples through various techniques in the laboratory, conducting data analysis and presentation of the results.

No previous experience is required to take these courses and we welcome both students who engage in fieldwork and those who engage in laboratory work. We also welcome students who have had few opportunities to communicate in English. Please take this opportunity to communicate with an international community of peers during the course.

In the Field Science Course, students will learn the fundamental methods to study the ecology of wildlife. We stay in a small village and eat local food. We hope you enjoy the nature and culture of Yakushima Island.



1.1.1 Possible change of the plan due to new coronavirus

We cannot expect the number of participants due to new coronavirus. We may change the plan depending on the number of participants. If the total number of participants is small, we may hold only one course. If the risk of infection is very high at the time of the course, we may cancel the course.

1.2 Application

Graduate students in the Division of Biological Science, Graduate School of Science, Kyoto University (as of October 1, 2020) can apply for the courses. We accept a limited number of participants due to the safety considerations of fieldwork and limited capacity for accommodation and transportation.

The Field Science Course will be held on Yakushima Island and the Advanced Laboratory Course will be held at Yoshida Campus of Kyoto University in Kyoto City.

Students may apply to either the Field Science Course or the Advanced Laboratory Course, though we encourage you to take the both courses. Applicants must send the form before the deadline. If we have more applicants than our capacity, we will select participants within a week of the application deadline. The application form is available at the following site:

<http://www.wildlife-science.org/ja/curriculum/>

1.3 Fee

Students of Kyoto University must pay approximately 17,000 yen for meals and insurance for the Field Science Course in Yakushima on the first day (no fee is required for the Advanced Laboratory Course). This amount will be paid back to you from the university approximately one month later. Invited students do not need to pay the fee.

During the Field Science Course in Yakushima, students must pay the costs of meals other than those provided at our field station (e.g., during travel, lunch on the first day, lunch and dinner on the last day on the way back from Yakushima), and for optional activities such as entrance fees at sightseeing spots (¥300-500 / site), public baths (¥200-500).

2. Schedule

Field and Genome Science Courses in fall

September 13 Deadline for application by students of Kyoto University (both for the Field Science Course and Advanced Laboratory Course)

September 16 Fix the members and the courses

October 22 Introduction of the course, lectures on safety during fieldwork in Yakushima, self-introductions by participants

Place: Seminar room on B1 floor of Wildlife Research Center, Kyoto University, Kyoto City. Students in Inuyama can participate in the meeting through web conference.

Field Science Course

Place: Yakushima Island, Kagoshima Prefecture

- Oct 24 Field Science Course starts (Move to Yakushima on this date)
 From Kyoto: 09 : 35 Kobe - 10 : 45 Kagoshima
 12 : 55 Kagoshima - 13 : 35 Yakushima
 (Flight schedule is not fixed)
 From Inuyama: 900 Chubu Centrair - 1025 Fukuoka
 1305 Fukuoka – 1405 Yakushima (Flight schedule is not fixed)
 Meeting in the evening: introduction of the lecturers and courses, etc.
- Oct 25-28 Fieldwork in Yakushima
- Oct 29 Data analysis, presentation in the afternoon
- Oct 30 Leave Yakushima (if we have time, we will visit some places in Yakushima)
 To Kyoto: 18 : 00 Yakushima - 18 : 35 Kagoshima
 19 : 55 Kagoshima - 21 : 00 Kobe
 (Flight schedule is not fixed)
 To Inuyama: 1705 Yakushima – 1740 Kagoshima
 2025 Kagoshima – 2140 Chubu Centrair
 (Flight schedule is not fixed)

Advanced Laboratory Course

- Nov 2–6 Laboratory experiments and analyses, at WRC, Kyoto. In the latter part, we will prepare for the presentation of the results (both for Field and Laboratory Courses) in the international seminar on Nov 10
 Place: Wildlife Research Center, Kyoto University, Kyoto City

International Seminar

- Nov 10. We will present the results of the Advanced Laboratory Course and Field Science Course. Invited students will also present their own current research.
 Place is not fixed

3. Field Science Course in Fall

3.1 Participants and staff

About 10 graduate students (invited students from abroad and graduate students of Biological Science, Kyoto University)

About 4 teaching staff, including professors, post-docs and graduate students who study in Yakushima and/or subject species.

At this moment, we are not very sure if we can invite students from foreign countries. If we

cannot, we may reduce the number of participants and group.

3.2 Groups

We form two groups in the field course (aerial survey and raccoon dogs), and DNA and image analysis in the laboratory course. Each group will engage in different tasks. Choose your preference among the groups, including your first and second choice. Please note that we cannot ensure your first preference due to limited capacity in each group.

A) Raccoon dog group

Title

Fecal survey in raccoon dogs

Lecturers

Hideki Sugiura and Takafumi Suzumura

Abstract

Raccoon dogs are originally endemic to eastern Asia including Japan. They had not distributed on Yakushima Island but are introduced in 1980's. Although they appear to expand their distribution on the island, we have few data about them.

In this course, we try to collect basic data on raccoon dogs. They have habit of defecating at latrines and we try to find them. If we find a latrine, we collect DNA samples from feces. We will also set camera traps aiming at latrines and take pictures.

B) Aerial survey group

Title

Aerial vegetation survey using UAV

Lecturers

Hideki Sugiura and Tamao Maeda (Wildlife Research Center)

Abstract

The western lowland on Yakushima Island is believed to be covered by a natural forests that is very precious at present and have been designated as World Heritage. Actually, however, the forest had been logged until 1950's and we can find many artificial plantations, such as camphor and cedars. Such plantation may be better to be removed for restoration of natural forest. These plantation may also influence the density of monkeys and deer there, as they favor camphor and avoid cedars. The detailed distribution of the plantation in the area have never been surveyed yet.

In this course, we take aerial pictures of the forest using UAV (unmanned aerial vehicle / drone). The planted trees are usually grown in clumps and we can recognize them from aerial photos. We also confirm plantations by ground survey. We will learn the basic skills of flying a

drone and processing photo image.

4. Advanced Laboratory Course in fall (Nov 2-9)

Following the Field Science Course will be the Advanced Laboratory Course. We will analyze the sample collected in the Field Science Course and present the results together with the field observation in the Field Science Course.

A) DNA group

Lecturer

Miho Murayama

Place

Wildlife Research Center, Kyoto City.

Abstract

Raccoon dogs in Yakushima was considered to be descendant of a pair which was introduced recently. Therefore, we expect that their relatedness is higher than that of raccoon dogs in other area. We extract DNA from samples which were collected in Yakushima and other area, and conduct microsatellite genotyping to compare relatedness.

B) Aerial photo analysis group

Lecturer

Tamao Maeda, Hideki Sugiura

Place

Wildlife Research Center, Kyoto City

Abstract

We will analyze aerial photo taken on Yakushima Island using Q-GIS software. We map the plantation in the study area. Participants will learn basic skills of GIS software.

4.2 Reports on the past program and reports

Leading Graduate Program of Primatology and Wildlife Sciences (in English)

<http://www.wildlife-science.org/en/curriculum/yakushima-field-science-course.html>

CCTBio HP (in Japanese)

http://www.wrc.kyoto-u.ac.jp/core-to-core/training_old.html

5. Information on fieldwork and life in Yakushima Island

5.1. Fieldwork

Research in Yakushima

In the lowland forest, the canopy is closed and the forest floor is dark. Undergrowth is sparse in the western lowland where you can observe habituated Japanese macaques and deer. In the highland, undergrowth is dense and the summit area is densely covered with bamboo grasslands. There are no trails in the western lowland forest, but we can walk through most parts easily. We sometimes walk on steep slopes and cross streams. In other parts of Yakushima, we walk only along logging roads or existing trails for hikers. Please wear long trousers and sturdy shoes to protect your legs and feet in case you lose your balance.

During the month of October to November, you may get bug bites (mostly mosquitoes) and hornets are still active and aggressive. A long-sleeved shirt is good for protection from insect bites. Wear a long-sleeved shirt in particular if you have sensitive skin. We also walk on the road to search for animals and their feces. Sunlight is strong on the road, so you should also have a hat.

In the forest, visibility is poor and you need to confirm your location using a map and compass.

Weather

Air temperatures are about 18-26 °C in May and 17-23 °C in late October in lowland areas. Note that air temperatures are much lower in high-altitude mountainous areas. The temperature around the summit is 10°C lower than around the coast (we do not go to the summit area, in 2020 fall).

What to wear in the field

- Long-sleeved shirt, long trousers, hat or cap

In general, it is better to wear a long-sleeved shirt and long trousers to cover your skin in the field. They will protect you from insect bites, scratches and strong sunlight. Long trousers should be soft and loose enough to walk on steep slopes. Avoid tight jeans, because they restrict movement and become heavy and hard when wet.

- Footwear

Avoid slippery shoes or those that do not completely cover your feet, such as sandals.

Mountaineering/hiking shoes/boots are the best, if you have them. We recommend them, particularly if you do not have much experience walking in hilly/mountainous forests.

Jogging shoes or sneakers are good in the lowland forest, though they are not water proof and may not protect your feet in rocky terrain. They should be tough enough to walk on rocky slopes. You can rent appropriate footwear from a sport shop in Yakushima and can be reimbursed for such expenses by the university.

If you have old mountaineering shoes, jogging shoes or sneakers (more than 3 years), check

their soles. Old bonds may become weak and the soles can fall apart. Some participants had have their soles fall apart.

High boots are also good, if you are experienced in walking in the mountains with them.

- Rainwear

Waterproof and breathable fabrics (e.g. Gore-Tex) are highly recommended. You can borrow these as well from a sport shop in Yakushima and be reimbursed for such expenses.

- Gloves

You may wear gloves if you like. Thin gloves are good for manipulation, such as taking notes, while protecting your hands and adding grip in the forest.

5.2. Accommodation and meals

In Yakushima, we stay in the field station (JMC Yakushima Training House) in Nagata Village. All meals are provided during our stay in the field station. For dinner, you can enjoy local foods cooked by local people. Students and staff will not cook except dinner on the last night. We wash dishes and clothes and clean the rooms by ourselves.

Do it yourself in the field station

We have no housekeeper in the station. You will be responsible for maintaining the station and doing daily chores such as cleaning, washing clothes, packing lunch, washing dishes, taking out the garbage, etc. Please do these things actively and cooperatively.

Meals

Meals are cooked by a resident in Yakushima. Please help her cook when necessary. If you have food allergies or food(s) to avoid (e.g., for vegetarians), please let us know.

We pack lunches by ourselves. Bring a lunchbox of your own preference and any utensils necessary (spoon, fork, chopsticks, etc.).

Room and bedding

In the Field Station, there is a dining hall, kitchen, 3 shower rooms and 3 restrooms. You will share one of 5 bedrooms with other students (4 people / room). Each bedroom has two bunk beds with mattresses. Please bring your own sleeping bag or blanket and/or warm clothes, as the temperature may drop to 15 degrees at night and we do not have enough blankets in the station. Expensive, high-quality sleeping bags are not necessary; inexpensive ones are good enough as we stay inside the house at night.

Bath

There are three shower rooms. We prepare shampoo and soap, which you can use freely for bathing. If you prefer your own shampoo or soap, please bring them. Have your own towel for

bathing.

As it takes a long time for everyone to take a shower, some of us may go to a public bath. You can try the Japanese public bath if you like. When you go to a public bath, bring soap and a towel with you.

Washing clothes

Two washing machines are available at the station. We will provide the laundry detergent. Please wash your clothes together with those of other station members to save time and avoid wasting water/electricity. We prepare mesh bags for washing, in which you can put your clothes. Do not start washing after 10 p.m. to avoid making noise and inconveniencing others.

Others

You may bring sandals, which may be useful for walking around the station.

Shopping

In Nagata Village, you can buy snacks, drinks and daily necessities at a small shop. There are no supermarkets or convenience stores in the village. There is a supermarket in Miyanoura (20 km from the field station), the largest town in Yakushima Island, but you may not have time to go shopping there, except on the first and last day. You will have some time for shopping on the last day.

5.2. List of personal equipment

Equipment for field research (common to all groups)

In addition to below, some other equipment will be necessary depending on your activity. Special equipment in each group will be announced later.

- backpack (20-30 liters is enough)
- notebook (pocket size is good)
- pen / pencil
- marker (with which you can write on plastic sample bags and plastic tubes)
- canteen (you may use a PET bottle)
- lunch box and spoon, fork, chopstick (bring a plastic container to pack your lunch to Yakushima)
- flashlight (and batteries)
- whistle (we can lend some whistles. Please let us know if you do not have it)
- sampling bag, tube, etc. (they are given to participants at Yakushima)
- maps (they are given to participants at Yakushima or Kyoto)
- poison remover (they are given to participants at Yakushima)
- backpack cover, or plastic bag inside the backpack (optional, when it is rainy)

- long trousers (and a belt, must)
- socks (must)
- rainwear / umbrella (when it is rainy)

- insect repellent (optional)
- antipruritic (optional)
- sunscreen (optional)
- snack, candy, etc. (optional)
- adhesive tape (optional, each lecturer has a first-aid kit)
- towel (optional)
- tissue (optional)

- vest (optional)
- waist pouch (optional)
- spats optional)
- gloves (optional)

- camera (optional)

Other things for stay at the field station

- sleeping bag or blanket (must).
- underwear
- clothes (which you can wear in the house)
- sandals (optional)
- towel
- toilet kit
- laptop (optional; a personal laptop computer is useful for data analysis and presentation of the results)