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.)

	2024. 11. 11
Affiliation/Position	Wildlife Research Center/M1
Name	Muhammad Nur Fitri Suhaimi

1. Country/location of visit

Chubu University Training Center (Ena City) 985-1, Nishikawarada, Takeori, Takenami-cho, Ena-shi, Gifu

2. Research project

Basic Skills for Field Work

3. Date (departing from/returning to Japan)

2024. 11. 06 – 2024. 11. 08 (3 days)

4. Main host researcher and affiliation

Professor Ikki Matsuda (Professor at WRC) and Dr. Satoru Sugita (Associate Prof at Chubu University)

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.

The three-day training course of Basic Skill for Field Work at the Chubu University Training Center in Ena City, Gifu, was conducted to introduce the participants, especially the students, to outdoor living skills and safety methods necessary for conducting fieldwork. The two main objectives of this course are, firstly, to teach the fundamentals of drone-based research, including hands-on drone operation and data processing, and secondly, to encourage teamwork and communication through collaborative activities among participants. The course also aimed to address key safety concerns related to outdoor activities and drone operation especially the law in Japan, ensuring that participants would be equipped to handle various challenges in the field.

2024/11/06 – Wednesday

On the first day, our journey began with a trip to Chubu University Training Center (Ena City) in Gifu by shinkansen and arrived at the center around 2 PM. The training started immediately after our arrival where we began with a crucial safety training session that highlighted the necessary precautions we needed to take when working outdoors and operating drones. This session covered basic drone technology, how drones are used in research, and most importantly the laws and regulations surrounding drone use such as the maximum height is 150m from the ground and must maintain 3m distance between drone and objects. I believe this was one of the important sessions as we were introduced to the laws regarding drone usage in Japan by the Aviation Act that I was not aware off before. It is also important to check each country's law and regulation regarding drone use as it might differ among different countries. It was a good introduction to understanding the legal and ethical side of working with drones in research settings.

Following the safety and lecture sessions, we had an orientation for the hands-on drone training the next day, where we learned about the software Agisoft Metashape, which would be used for processing drone images. We installed the software on our laptops and got a brief overview of how it works.

2024/11/07 – Thursday

The second day kicked off with breakfast and our first session began at 9 AM where we spent the morning learning how to manually operate drones and practice on flight simulators. It is good to have two individuals flying the drone where one acts as the controller while the other acts as the supporter. In addition to learning the drones' control systems, we were also reminded again regarding the laws flying the drones such as maintaining the height below 150m although the drones can fly up to 600m. We also had the chance to try out flying micro-drones indoors after accustoming ourselves to the flight simulators via iPad. After trying to fly the micro-drones, we finally had the chance to fly the real drones manually outdoors out in the field. It was a fun but challenging experience, and the simulator helped us get a feel for controlling the drones.

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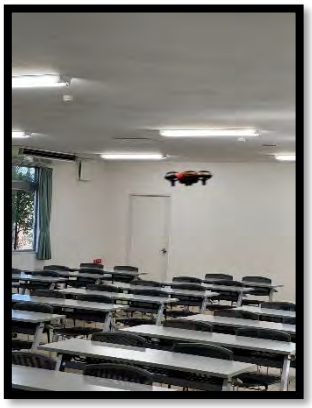

Fig. 1: Flying micro-drone indoors.

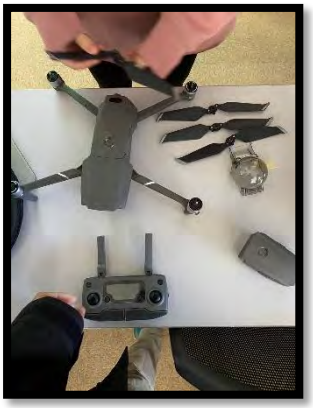

Fig. 2: Understanding the mechanisms of drones.

After lunch, we had another drone flying session outdoors with autopilot systems where we started off with the lectures and guides. This part was fascinating because we learned how to plan a flight path for the drone in advance, which is essential for ensuring that the drone captures the right data in a specific area. We then put that knowledge into practice, flying drones outdoors and testing out our flight plans. It was fascinating to see the drones automatically fly towards the selected point and act as instructed that we had preset prior to flight such as capturing photos or recording videos.

Fig. 3: Hands-on experience navigating drone outdoors.

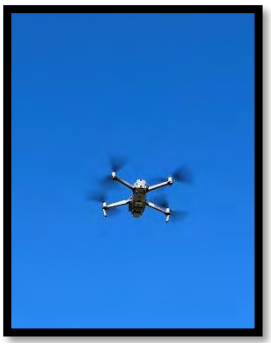

Fig. 4: Drone automatically flies towards preselected points

Fig. 5: Successfully operated drones safely outdoors.

In the evening, we switched gears and focused on processing the images we had captured with drones. Using Agisoft Metashape that we had installed the day before, we began to understand how the software can turn our drone footage into 3D models or detailed maps. The software is quite powerful, and while it was a bit technical at first, the hands-on approach helped us to grasp the basics.

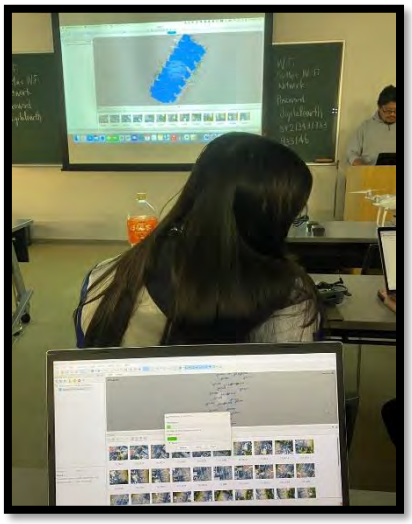

Fig. 6: Using Agisoft Metashape software to analyze photos taken by drones.

2024/11/08 – Friday

On the final day, after we had our fulfilling breakfast, we covered subjects like data analysis using multispectral cameras. We were further introduced to other flying crafts other than drones that have been useful for society and have multiple benefits such as inspecting the location of landslides, which is very beneficial for disaster-prone areas. Moreover, this session was especially useful for those of us interested in using drones for environmental research. Multispectral cameras capture data across different wavelengths, which is useful for things like vegetation monitoring, water quality analysis and more. Finally, we also had the opportunity to present the outcomes of this coursework and share with other participants and instructors. This was a great way to reflect on what we had learned and hear feedback from instructors and peers.

Overall, the drone research training course at Chubu University Training Center was an incredibly valuable experience. As a student who conducts research in the field, I gained hands-on knowledge in drone operation, data processing and flight planning – skills that I can now apply to my future projects.

6. Others

I would like to express my heartfelt gratitude to several key individuals and organizations that made this course possible:

1) I want to extend my sincere appreciation to PWS for their generous support and funding of our trip from Kyoto to Gifu.
2) I am especially grateful to Professor Ikki Matsuda for meticulously planning, coordinating and conducting this course. I also want to show appreciation to Dr. Satoru Sugita for the lectures, guidance and practical training on using the drones throughout the 3 days. Their insightful knowledge and guidance enriched our learning experience and inspired us to think critically about the practicality of drones in wildlife research.
3) A special thanks goes to all the staff at the center for the location and meal preparation, and also their unwavering support for us during the course.
4) Lastly, I would like to express my appreciation for my fellow M1 friends – Honoka, Hizuki, Casey, Xorlali, Haruka, Liu Liu, Gakuto, Madoka and Rie (Chubu University PhD student). Together, we tackled challenges

and celebrated successes. I appreciate the cooperative efforts among us, and I will cherish the bond that we created forever.

Fig. 7: Participants of this year's Basic Skills for Field Work course with Prof. Matsuda and Dr. Sugita.