

This report should be submitted within 2 weeks after you return to Japan. Please do not change the formatting

(Abroad • Domestic) Internship report form (Student) 2022/10/26 (Year/Month/Day)

Name	PAUDEL RAJAN PRASAD
Laboratory	Wildlife Biology and Medicine
Year (Grade)	D4
Internship institution	The University of Melbourne
Internship period	Internship period: 09/12/2022 - 09/30/2022 (Departure Date from Sapporo: 09/10/2022, Arrival Date in Sapporo: 10/02/2022)
Purpose	The major purpose of the activity was:) to acquire skills for building networks and collaborations with international researchers) to understand Australian biodiversity and wildlife health issues) to compare the teaching learning environment and explore future career opportunities

- The reason why you chose this institute

The University of Melbourne (UoM) is the number one university in Australia and ranks 33 worldwide in 2022. Internationally recognized researchers and projects related to one-health and wildlife are being conducted at the university. To realize my future career path my internship at this university will be very helpful. I hope to build collaborations with researchers at the University of Melbourne so that I can use this network to develop my future career path in Australian institutions and or develop collaborative projects focusing on wildlife ecology and disease in Nepal.

- Result of the activity (about 800 words, provide photos, tables, and figures that clearly show the activities during the period)

First week (12 to 17th September):

During the first week, I was engaged in understanding the neurological disorder in eastern grey kangaroos at the plenty gorge national. I observed differences in behaviors in regular kangaroos and kangaroos with toxicity. Tian Chen (Ph.D. student) had radio-collared kangaroos with initial symptoms of suspect Chronic Phalaris toxicity; some of these kangaroos in the later stage of the disorder showed apparent differences in behavior characterized by open ears, head tremors, and ataxia. The toxicity accumulated in animals when they grazed on Phalaris grass. We located three such kangaroos and Tian euthanized them for welfare, management, and research reasons. Brain samples of the euthanized individuals were collected and stored for diagnosis. Previous studies had detected neurons in

the central nervous systems of affected kangaroos displaying extensive accumulation of pigment.



Figure 1: Removing the radio collar of the eastern grey kangaroo that showed clinical signs of suspect chronic phlaris toxicity with Tien Chen (right).



Figure 2: Eastern grey kangaroo (female) with a young in her pouch photographed in its natural habitat at Plenty George National Park, Victoria, Australia

Next, I learned about **Chytridiomycosis** which is ranked as one of the worst wildlife diseases causing most extinctions of frogs. I learned that differences in genetic diversity and structure made some populations and individual frogs more susceptible. Ph.D. students Danielle Wallace and Alex were working with Dr. Laura Branley and Associate Professors Lee Skerratt and Lee Berger to understand how the *Batrachochytrium dendrobatid* (Bd) fungus may be influencing the breeding behavior of tree frogs such as calling effort, color change, and mate choice.



Figure 3: Frog collection at the Werribee campus and a tree frog.

I gave a **talk to the one-health research group** of the Melbourne veterinary school. My talk covered topics from my research on sloth bears as well as wildlife conservation and one health issue and opportunity in Nepal. I also met Professor Josh Slater, Head of Melbourne Veterinary School who together with Professor John Fazakerley, Dean of the Faculty of Veterinary and Agricultural Sciences approved and supported my internship.



Figure 4: My presentation (onsite and online) to the one health research group at the Veterinary campus, University of Melbourne.

At the end of the first week, I went to **Zoos Victoria-Melbourne Zoo** for a meeting with Chris Banks. He is the international conservation manager at the Zoos Victoria based at Melbourne Zoo. We discussed the conservation priorities and efforts of the Melbourne Zoo. Chris explained that Zoos Victoria prioritized on providing good health care and enrichment to existing animals and supporting conservation in the wild. He was positive to support in capacity building of Nepalese researchers and zoo personnel in the management of wildlife in captivity. We also met Dr. Sarah Frith who is the Wildlife Outreach Veterinarian. She explained to us how they were providing veterinary care for a wide range of exotic and native zoo animals as well as sick and injured Australian wildlife.



Figure 5: From Right to Left: Me, Chirs Banks, and my host Pam Whitley.



Figure 6: Melbourne Zoo is supporting local efforts in the wild that benefit the habitat and population of wildlife that they have on exhibit.

Second Week: 19 to 22nd September

I participated in the mobile vet clinic organized by Melbourne university in the **Lake Tyers Aboriginal Trust**. The Trust manages the 4,000 acres of Lake Tyers Reserve and consists of more than 30 households of indigenous people also known as First Nations People. They suffered heavily from European colonization and now consist of only around 3% of the total Australian population. I observed veterinarians and students tend to companion animals. Most of the work was focused on desexing and providing basic vaccinations and medications. DVM final-year students were involved along with veterinary doctors from the University Hospital. The community received veterinary service at their doors which otherwise would have been very costly as getting veterinary service in these areas would be very costly because of travel and very few clinics. I also engaged in the rapid surveillance of wildlife in the area. These indigenous people often encountered injured wildlife mostly from forest fires and road accidents and wanted to provide care for them. However, they had limited capacity and needed external support for providing care.



Figure 7: At the entrance of Lake Tyers Aboriginal Trust which shows the traditional boomerang gate.



Figure 8. Lake Tyer's mobile clinic location, sign board, and Emu bird.

We visited **Raymond Island** to observe the wild **koalas** and their habitat. Koalas' habitat in this area consisted of the eucalyptus trees interspersed in the human settlement. The best way to observe them was to look for their droppings. These pellets are similar in size and shape to olive fruit. Fresh pellets smell strongly of the eucalyptus and are usually dark greenish in color. We observed four koalas in four eucalyptus trees.



Figure 9. Koala was observed resting at the top of a tree on Raymond island. They mostly feed on eucalyptus leaves and spend most of their time on them. These trees are very prone to fire and of which a lot of Koalas were injured during the fire hazard in Australia.

Third Week: 26 to 30th September

In the third week, we started with a **necropsy** of southern brown bandicoot and greater cormorant. I assisted Pam with a necropsy of greater cormorant. This bird was found dead and collected on a beach near Melbourne. I examined the physical condition of the bird which indicated a loss of muscles, but the bones were intact, and no wounds or bites were detected. Necropsy showed the presence of nematode worms in the stomach and extensive peritonitis (red inflamed area over intestines and in the abdomen). Microbiologist Rhys cultured pure heavy cultures of the bacteria *Aeromonas sobria* from both the peritoneal swab and liver which might have contributed to its death.



Figure 10. Performing physical status examination of the greater cormorant, discussion with the microbiologist about the results.

Next, I went to **Federation University** to meet Dr. Wendy Wright who is a Professor of conservation biology and the Dean of the graduate school. She currently leads a field program for undergraduate students in Chitwan National Park which is also my research site for my Ph.D. study. We discussed wildlife health in Nepal and the possibilities for expanding this collaboration. She agreed to incorporate wildlife

health in their next field program and invited me to give a talk with the students about my research and one-health issues in Nepal.

After meeting with Wendy, we went to meet Dr. Helen McCracken who was the senior veterinarian at the **Healesville sanctuary** zoo. She described about the zoo and how they manage wildlife inside the zoo as well as the cases that they receive from the wild. They had impressive facilities and working procedures that ensured disease detection and treatment whilst also minimizing the risk of disease transmission from wild to captive or vice versa. The treatment facilities were constructed in a manner that public visitors could see the veterinarians working and could also ask questions. It increased appreciation for the work that veterinarians were doing and increased empathy towards wild animals. We were shown around by Dr. Leanne Wicker who was the Wildlife Health and Welfare Advisor at the zoo. She had been pushing for a holistic approach to one health where wildlife health and welfare are focused not just on individuals but their population and habitat, where they can exhibit their natural behaviors.



Figure 11. Meeting at the Healesville sanctuary with Dr Helen McCracken, Senior Veterinarian.



Figure 12. General public can see veterinarians working inside through the transparent glass and veterinarians can explain the cases and answer questions from visitors. This design increases bring veterinarians close to the public and increase appreciation from them.

The next day we went to the **Werribee zoo**, which is an open-range zoo focused on African wildlife in over 225 ha area. The zoo provides simulated African habitat as well as the African village and its culture to provide a more enriching wildlife viewing and learning experience. The zoo had recently expanded its hospital facility after overwhelming cases of injured and orphan wildlife due to bushfires and donations. We had a meeting with Dr. Paul Eden who was the associate veterinarian and Dr. Jen O'Dwyer who was a part-time vet at the zoo with considerable experience working for Animals Asia in their bear rescue program. We observed a necropsy on Wombat and visited the extended facility. Jen shared her knowledge and experience during the bear rescue work in Lao and Vietnam.



Figure 13. Dr Paul Eden explained about the wildlife hospital facility at the Werribee zoo and the wombat that was provided to the hospital for treatment by a local wildlife carer.

At the end of the week, we had a meeting with Dr. Steve Unwin who was the Program Manager- of one Health Surveillance and Wildlife Collaborating Center for Australia and the Indo-Pacific for wildlife health Australia (WHA). WHA is a coordinating body for wildlife health in Australia. They play an important role in facilitating communication, coordination, linkage, and providing technical information to assist existing stakeholders in their response during wildlife disease and health incidents. I shared a framework for wildlife health in Nepal and received feedback on things to consider forwarding the issue and institution for wildlife health in Nepal.

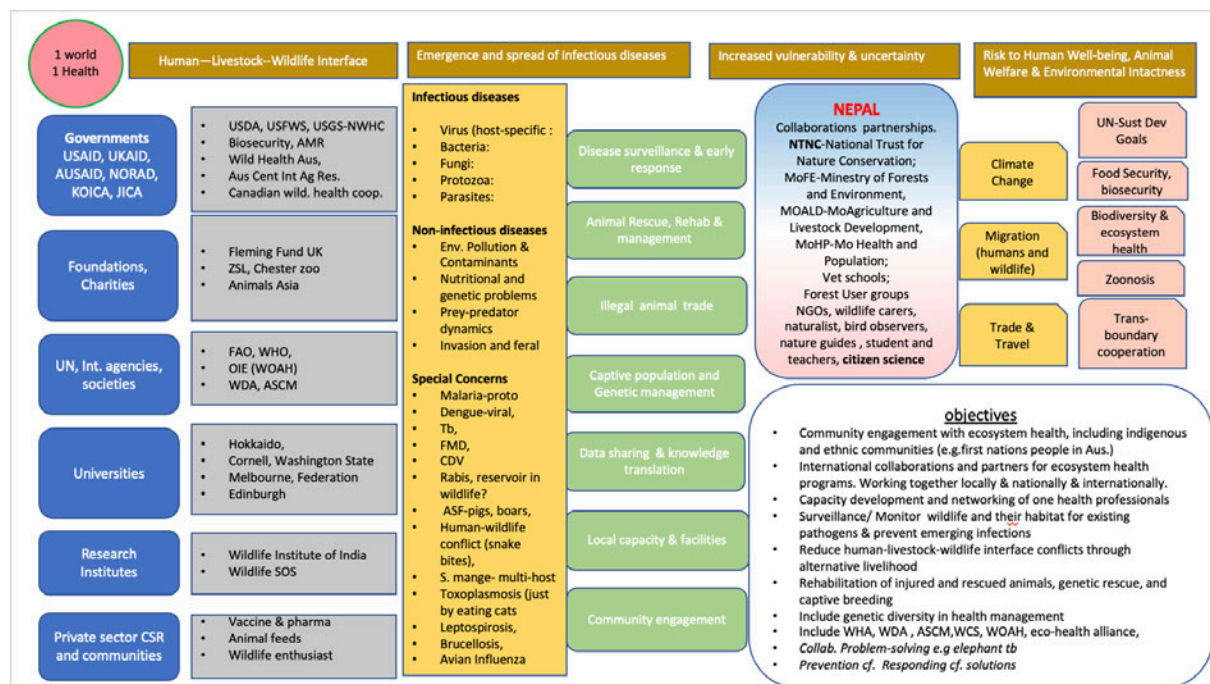


Figure 14. The wildlife health framework for Nepal was drafted and discussed with Steve Unwin from Wildlife Health Australia.

Besides, I also had a discussion with Caitlin Pfeiffer, Senior lecturer in Veterinary Epidemiology who also wanted me to deliver a talk during their Epidemiology think tank meeting. I also had a short meeting with Laura Hardefeldt, a senior lecturer in veterinary biochemistry who was working on an anti-microbial resistance study funded by the Fleming fund UK. I also met Nepalese researchers at the University of Melbourne and Federation University and discussed their experience living and working in Australia.

Updated May 2021

- What do you think the positive impact of the activity will have on your further career path?

Over the next decade, I hope to work in wildlife research and conservation. From this internship at the UoM, I understood how citizen scientists, ecologists, epidemiologists, and veterinarians with expertise in different fields work together to ensure animal welfare and wildlife health. I experienced the working culture and understood ongoing research and interest in future research collaborations. Meeting with researchers across institutions and backgrounds has helped me to develop communication and networking skills. I hope that the connections that I have made during my internship will help me to develop collaborative research works and projects in the future.

- Advice for your junior fellows

Explore all possibilities. Start early. Search for people and places you have always wanted to visit. Use your network or ask your supervisor to connect you. Get suggestions from your friends and seniors. Think about what skills or experience you want to get from this internship and plan accordingly. Besides your own research take out time to learn the stories about the place, people, food, and culture.

Approval of supervisor	Institution · Official title · Name Department of Veterinary Medicine. Professor. Toshio Tsubota 塚田 敏男
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- ※1 Send the electronic file to the WISE Program Office
- ※2 Attach a copy certificate of the content of internship activity that is prepared by the counterpart at the internship institution (any form with a signature of the counterpart).
- ※3 The Steering Committee for the WISE Program will first confirm the content of this report and report will be forwarded to the Educational Affairs Committee for credits evaluation.