Project Update: July 2022

This report summarises the progress of the conservation project "Mapping Drivers of Habitat Loss and Fragmentation in Seasonally Dry Tropical Forest Landscape" after 8 months of deployment. Most planned activities have been carried out despite small delays related to the COVID-19 pandemic. In the following sections, I provide more detail on the project activities, both the completed and the upcoming ones, in chronological order whenever possible.

1. Initial stakeholder engagement

The beneficiaries of this project are the local stakeholders who manage or study the landscape of interests. Accordingly, I communicated with relevant organisations that can be broadly categorised as either government organisations, non-governmental organisations, or academic institutions. During my first visit in December 2021, I introduced my project to the government's Institute of Forest and Wildlife Research and Development, the Wildlife Conservation Society Cambodia (WCS Cambodia), ECOLAND Centre at the Royal University of Agriculture (RUA).

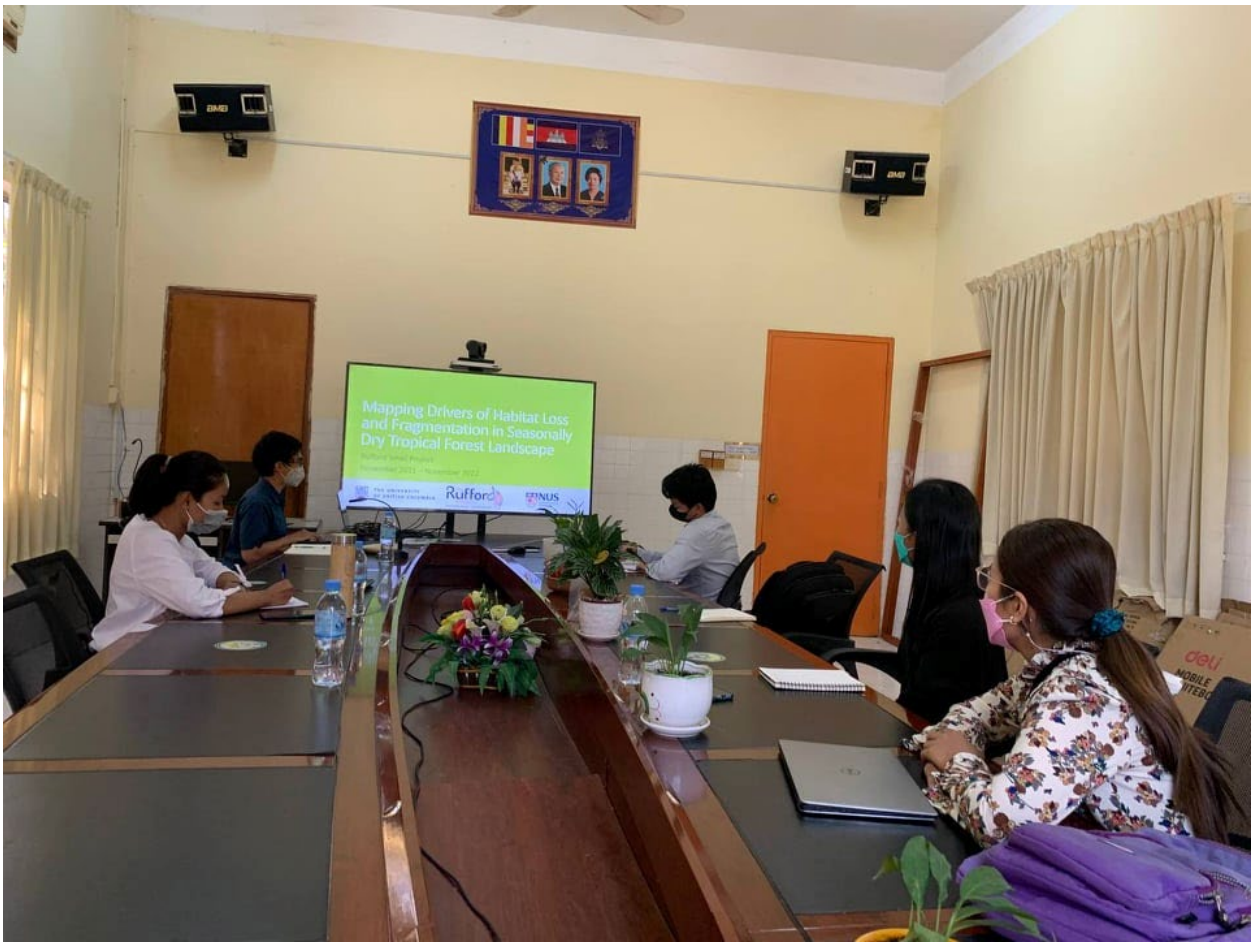

Figure 1. Project introduction to collaborators from ECOLAND Center at the Royal University of Agriculture, Phnom Penh, Cambodia.

2. Reconnaissance survey

Initial assessment of the field condition for a more focused assessment of wildlife movement was conducted at two locations, each located at either one of the two provinces of interest, Siem Reap and Preah Vihear. The reconnaissance survey harnessed aerial images captured by an Unmanned Aerial Vehicle (UAV) to cover more area efficiently (Figure 1). After considering the field situation and the other important factors, such as permits, site accessibility, etc., I decided to carry out the assessment of wildlife movement in Khun Ream Forest Research Station (Figure 4). One of the main constraints in Phnom Tbeng (Figure 3) is the large portion of privately owned lands within the potential study area.

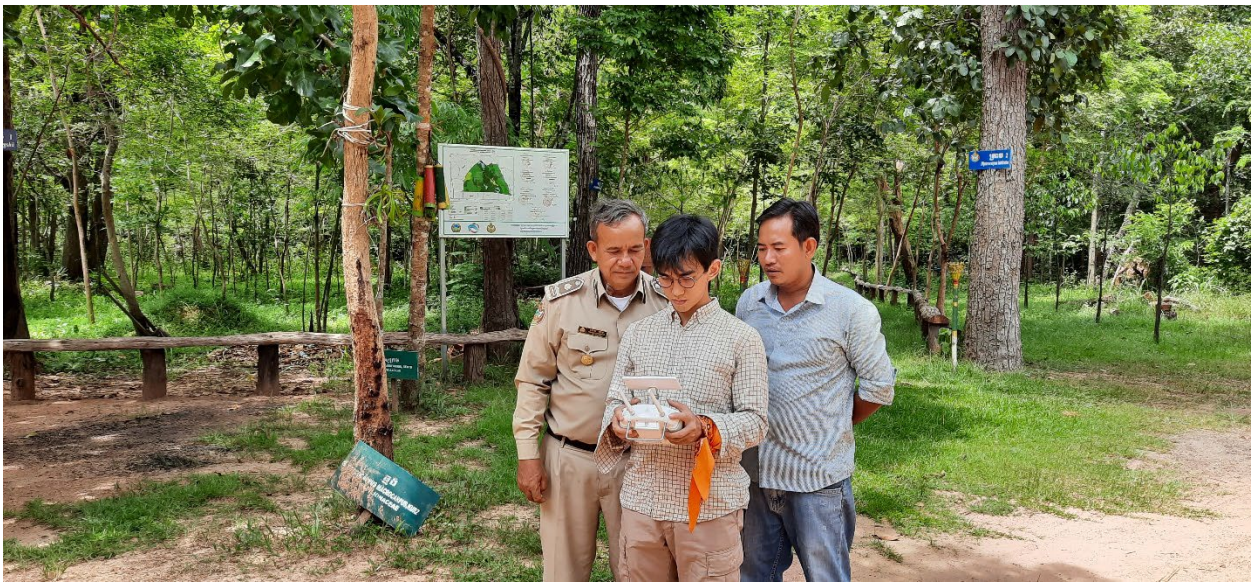

Figure 2. Reconnaissance survey using Unmanned Aerial Vehicle (UAV) to cover more area efficiently.

3. Trail camera installation and analysis

I installed six trail cameras in a patch of *Acacia* plantation at Khun Ream Forest Research Station (Figure 5) to record wildlife movements outside the natural forest between 1st January 2022 – 24th June 2022. Animals are most likely to cross the road that separates the *Acacia* plantation from the natural forest to get to the camera locations. The research station located right next to the *Acacia* plantation hosts human activities and may act as a source point of human-related disturbances. Therefore, the results of the camera survey provide insights into the interplay of non-natural land cover, road, and human activities in facilitating or inhibiting wildlife movement in the landscape.

An interesting conservation phenomenon occurred during the camera survey. Three animal species with the Vulnerable conservation status (IUCN Red List) were recorded in the camera survey: the long-tailed macaque, the northern pig-tailed macaque, and the sambar deer (Figure 6). However, hunting activity was also recorded at the location. Currently, the site manager seems to prioritise protecting the forest from illegal logging of trees, especially the prized rosewood (*Dalbergia cochichinensis*). Therefore, providing the site manager with the relevant skill and resources to minimise the threats related to poaching is one key recommendation for future projects.

Figure 3. Phnom Tbeng, Preah Vihear, is one of the few homes to the semi-evergreen forest ecosystem. This site is surrounded by privately owned lands, covered by tree plantations and settlements, which made getting a research permit here difficult.

Figure 4. Khun Ream Forest Research Station, Siem Reap, has a mosaic of the deciduous and semi-evergreen forest adjacent to restoration plots and tree plantations, such as the Acacia plantation shown at the top right of the image.

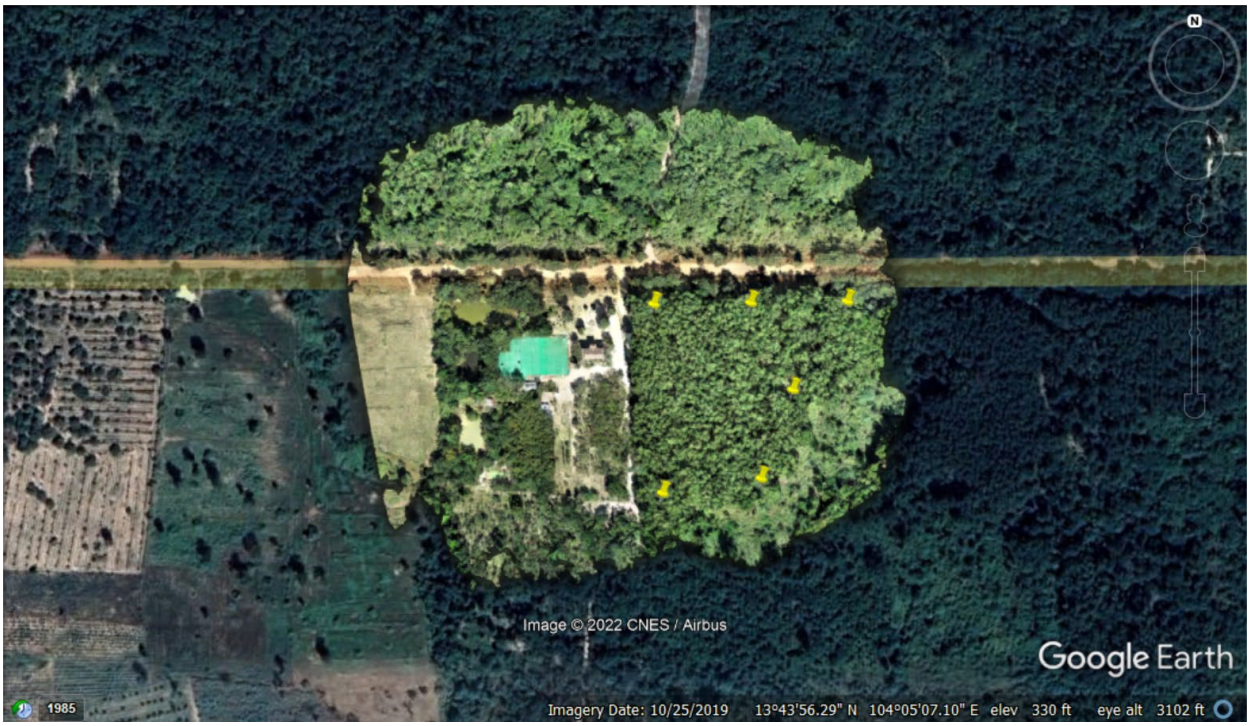

Figure 5. Ortho-photo of Khun Ream Forest Research Station with yellow pins indicating the trail camera locations between January 1st 2022 – June 24th 2022.

Figure 6. Three animal species with Vulnerable conservation status were detected in the surveyed Acacia patch (from left to right): Macaca fascicularis, Macaca leonina, and Rusa unicolor.

4. Trail camera re-installation

Following the illegal harvest of the rosewood trees in June 2022, the site manager requested I move the cameras to the natural forest area. Different from the previous effort, the new camera placement is higher from the ground because the survey targets poachers as well as large mammals (Figure 7). Hopefully, the new placement of cameras

can help the site manager monitor illegal activities in the area which eventually allows them to develop effective conservation strategies in a more informed way.

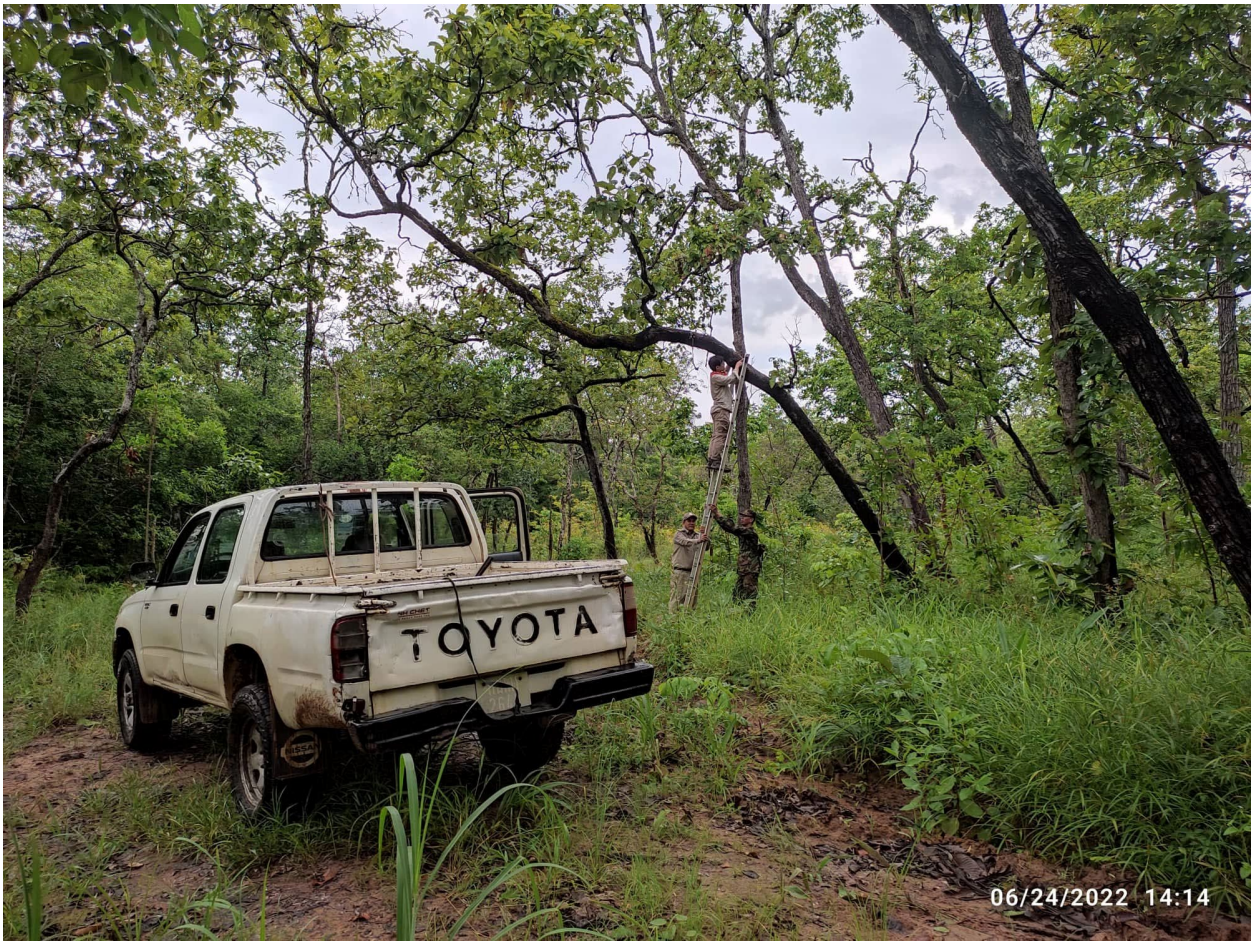

Figure 7. Installation of a trail camera to detect poachers in the deciduous forest. Despite regular patrol by military staffs, illegal harvesting of native trees' timber is prevalent in the area.

Upcoming activities

The following activities are in progress: land cover and connectivity mapping, and time-series analysis. I have a 30 m resolution land cover map for 2019 developed through remote sensing analysis that used the Sentinel-1 and Sentinel-2 satellite data. For the time-series analysis, I need a land cover map that represents another year before 2019. The connectivity analysis will unveil the remnant natural forest patches, both the fragmented and the well-connected ones. Electronic copy of key results will be shared with the local partners at the end of the project.