

## Project Update: September 2023

After over 1 year of waiting, we received a conditional research permit from Peninsular Malaysia's Wildlife Department, PERHILITAN, in July 2023. Our field site is the Beserah Forest Reserve in Kuantan, Pahang, Malaysia. It is a small forest complex surrounded by an urbanised state capital. The reserve is home to a variety of wildlife. However, the reserve is also subject to a number of habitat disturbances, including sound pollution from cars travelling around the forest and from nearby tourist hotspots, a telecommunications tower station within the reserve, and the high number of visitors to the reserve, including hikers, campers, and cyclists. Having now obtained the necessary research permit, we have been allowed to begin our research. Since then, the following activities have taken place:

### i. White-handed gibbon (*Hylobates lar*) distribution and habitat preferences in an urban forest reserve

We have been investigating the distribution and habitat preferences of white-handed gibbons (*Hylobates lar*) in this urban forest reserve using a combination of autonomous recorders and human-observer assessments. Autonomous recorders have been deployed throughout the study area to map the occupancy of gibbons. These recorders are able to detect gibbon calls and record them for later analysis. This allows us to collect data on gibbon distribution even in areas that are difficult for human observers to access.

Human observers are also conducting assessments to estimate group density and home ranges. This is done by following gibbon groups through the forest and recording their movements. This data helps us to understand how gibbons are using the landscape and how they are distributed within the study area. We are also checking the presence and frequency of habitat edge use to assess the extent to which gibbons avoid these areas. Gibbons are known to be sensitive to habitat disturbance, and we are interested in understanding how they use and avoid habitat edges.

### ii. Investigating the impact of sound pollution and visitor intensity on gibbon calling frequency and quality

We are employing a combination of Passive Acoustic Monitoring (PAM) and sound pollution assessment techniques. We will use PAM to assess the calling frequencies of gibbons. We will measure sound pollution by quantifying background noise levels before and after gibbon calls. We will explore the correlation between calling frequencies and visitor intensity. We will also use camera trap data and Artificial Intelligence (AI) techniques to count visitors on hiking trails. We will consider co-variables such as weather and time of day in the analysis.

### iii. Studying the perception of visitors in an urban forest towards primates

To understand the influence of visitor characteristics on knowledge and attitudes towards gibbons and other primates, we have been conducting a Knowledge, Attitudes, and Practices (KAP) questionnaire survey with visitors to the forest reserve. The survey collects data on visitors' age, place of origin, frequency of visitation, and other relevant factors. By analysing the survey responses, we will be able to examine correlations between visitor characteristics and their knowledge and attitudes towards primates and gibbons. We are also seeking to understand visitors' knowledge and attitudes towards primate canopy bridges. This will provide insights into the factors

that shape visitors' perceptions and behaviors towards these animals.

The survey is still ongoing, and we are still in the process of collecting data. However, we are excited about the potential of this research to help us better understand how visitors to primate habitats perceive and interact with these animals. This information can be used to develop educational and management programmes that promote positive visitor experiences and help to protect primates and their habitats.

#### iv. Identification of an effective gibbon bridge design:

We will soon be conducting a trade-off analysis to determine the characteristics of a suitable canopy bridge for gibbons and other arboreal wildlife. This analysis will consider factors such as cost, maintenance requirements, and animal preference for bridge usage.

We will soon be installing a number of canopy bridges at one of two candidate sites, Bukit Pelindung (within the Beserah Forest Reserve) or Sultan Haji Ahmad Shah Agricultural Park in Kuantan. We will monitor the crossing frequencies of all species across different bridge types, considering the cost and maintenance effort associated with each bridge. We will also consider the presence of visitors as a potential influencing factor.

With so much still to be known about effective canopy bridges for gibbons, this research is important because it will help us to further understand what may work. The findings of this research will be valuable for conservation managers and other stakeholders who are interested in using canopy bridges to promote the connectivity of forest fragments and other habitats.













