大学院教育支援機構（**DoGS**）海外渡航助成金　報告書
Outcome report

計画名 **Plan**	Exploring empathy in free-ranging Asian elephants
氏名 **Name**	Ana Sofia Penteado Vilela
研究科・専攻・学年 **Graduate school/Division/Year level**	Graduate School of Science, Division of Biological Science, 2nd year Doctoral Course
渡航国 **Country**	Republic of India
渡航日程 **Travel schedule**	年 06　月 03　日 2023　　～　　年 11　月 06　日 2023

- ページ数に制限はありません。No limits on the number of pages
- 写真や図なども組み込んでいただいて結構です。You can include pictures or illustrations.
- 各項目について具体的に記述してください。Please fill in each item specifically.
- 日本語または英語で記載ください。Please use Japanese or English.

渡航計画の概要　Outline of the travel plan

The **purpose** of my research trip was to perform field work on free-ranging elephants in Bandipur National Park, South India (figure 1) necessary to the development of my doctoral research project at the Kyoto University. This research is focused on the understanding of empathy in free-ranging Asian elephants and it is developed under supervision of Prof. Yamamoto from the Kyoto University and under collaborative guidance of Prof. Raman Sukumar from the Indian Institute of Science.
Given the focus on elephant behavior and ecology, behavioral data on free-ranging elephants is essential to develop my working plan.

The two main **goals** of my travel were **i)** to acquire knowledge and research skills and **ii)** to collect behavioral data on free-ranging elephants. These are two important aspects for the proper development of my research at the Kyoto University.
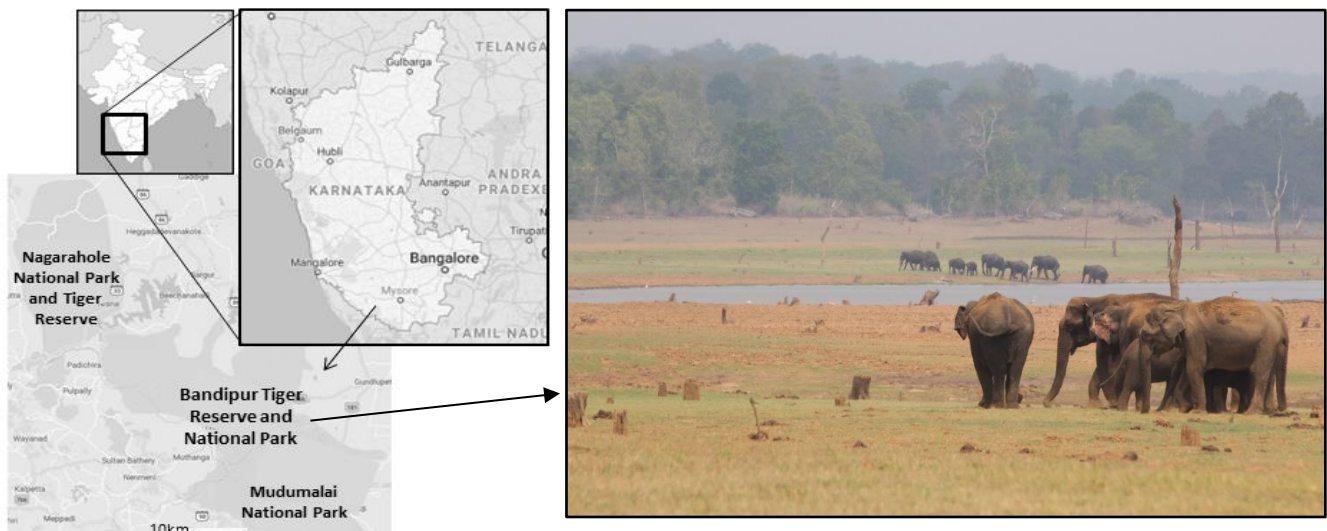

Figure 1 - Field site at Bandipur National Park, South India where I performed behavioral observations on free-ranging elephants (map source: google maps; photo: Sofia Vilela)

The main broad aims of my **research project** are:

1- Exploring potential mechanisms and functional significance of empathy during disturbances in free-ranging elephants;

2- Exploring the perception and expression of subjective mental states in free-ranging Asian elephants.

Thus, data collection on free-ranging elephants is essential to investigate my questions on empathy by considering the social-ecological context of this species.

The **travel period** took place between 6th of March and 10th (landing in Japan on the 11th) of June, 2023. During the first weeks, I stayed at the Indian Institute of Science, Bangalore, India. Afterwards, I moved to the Mudumalai research station, Tamil Nadu, India. On the 7th of May, I moved to N.Begur, Karnataka, India.

成果 Outcome

During this research trip, I improved my knowledge on the research topic and advanced my data collection. Therefore, the two main goals of my travel were accomplished:

i) Learning

I was a visiting student at the Indian Institute of Science, Bangalore (IISc), India (figure 2).

At the Prof. Sukumar's lab, Centre of Ecological Sciences, IISc, I got the opportunity to learn about my research topics and meet other inspiring researchers.

I had fruitful discussions on my topics, received guidance on the research plan and also improved my theoretical and practical knowledge. Specifically, I received teachings on age classification of elephants, practical advice of methodologies and instructions on logistical procedures.

Figure 2 - Indian Institute of Science, Bangalore, India

ii)   Data collection

At the Bandipur National Park, I performed field work on free-ranging elephants through direct behavioral observations (figure 3). It was collected 114h of behavioral data using video-recording on 84 observation occurrences.

Figure 3 - Field work on free-ranging elephants in Bandipur National Park. Behavioral observations were conducted from the jeep by keeping a safe distance from the elephant aggregations. All-occurrences data collection was performed using video-recording.

In addition, detailed photographs of each individual in the elephant aggregations were taken in order to cross-check different observations and identify repeated individuals. Recognizable features such as shape of tails, marks on the ears, depigmentation and any other distinct body characteristics were recorded for individual comparison (figure 4). Following this process, 45 individuals were identified and names were given to each.
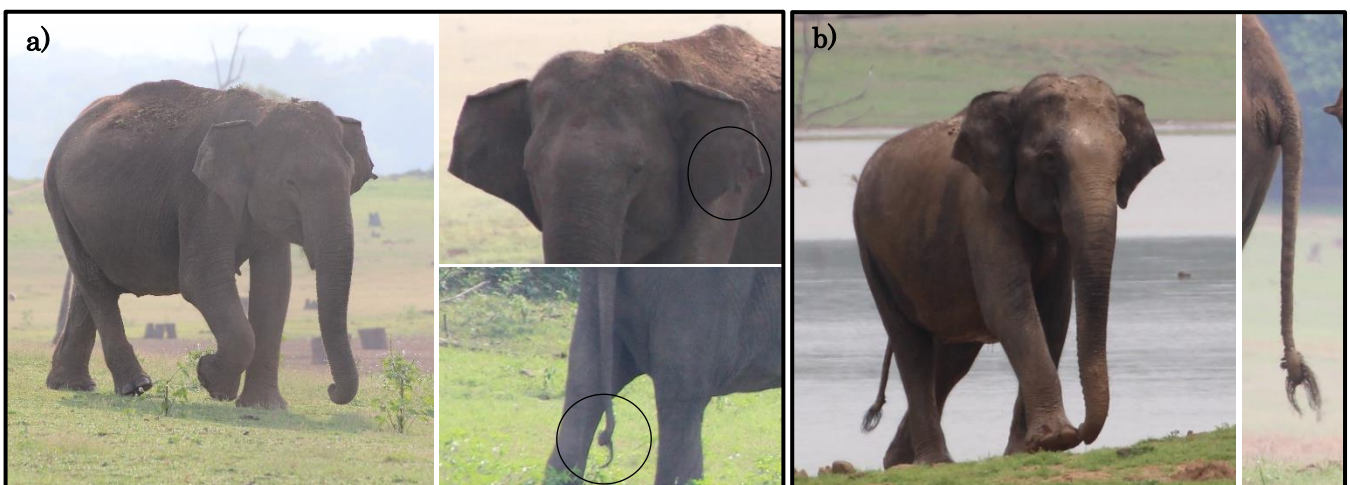

Figure 4 - Two of the identified elephants along with some of their distinct features

a) An individual named Sakura; **b)** An individual named Guadalupe

Short-term
The immediate next goal is to process the data collected. Thus, I will spend the next few months coding the videos with the aimed behaviors at the Wildlife Research Center Kyoto University for following data analysis.

Medium-term
In order to gather the data to approach all questions of my research project, I will need to perform another field season in Bandipur National Park, India. The overall main objective is to positively finish all collection, processing and analysis of data required to develop my research project. I expect to publish the findings in peer-reviewed journals.

Long-term
The successful completion of my doctoral program at the Kyoto University is a crucial step for my career development. Not only the learnings and research skillset acquired will be professionally essential but also the scientific outcomes on the field of empathy and elephant behavior will be of upmost importance for my aspirations as a future researcher.