

Camera Trap Study of Wild Elephants in Nam Poui National Protected Area

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Introduction

Camera trapping is a useful tool to help conservationists understand the diversity of species present in a given area, population dynamics and abundance of species as well as aid understanding in population ranges. Camera traps are especially useful for elusive and dangerous species that are nocturnal and or live in remote areas. Asian elephants (*Elephas maximus*) are hard to observe due to their living predominately in forests, avoidance of humans and potentially aggressive nature. Therefore, deploying camera traps in elephant range can help obtain information about them,

The total elephant population estimate for Laos is 300–400 wild individuals, however, none of these population estimates are backed by rigorous data and could be significantly lower (Ministry of Agriculture and Forestry 2022). There is a need for better understanding wild elephant populations in Laos in order to allocate resources to correct areas. Many smaller populations, for example, may be on the brink of becoming functionally extinct without intervention and it will be important for the survival of elephants in Laos to identify those areas and consider what interventions could take place. Nam Poui National Protected Area (NPNPA) is home to what is likely the second largest population in Lao PDR (Laos). The population estimates range from 40–80 individuals (Ministry of Agriculture and Forestry 2022) However, this, like all other population estimates in Laos, is mostly guess-work from sightings by both locals and forestry officials. In an aim to gather some baseline information about the elephant population in Nam Poui, The Elephant Conservation Center (ECC) deployed ten camera traps around locations known to be frequented by wild elephants to try and identify individuals

and lay the foundation for more rigorous, scientific population surveys.

NPNPA is situated in Sayaboury Province, in Northern Lao PDR, west of the Mekong River. It is one of Laos' original 18 National Biodiversity Conservation Areas (now called NPAs). Nam Poui NPA covers an area of 191,200 ha. NPNPA, which borders Thailand's Doi Phou Kha National Park and Phou Fa non-Hunting Area of Nan Province. A camera trapping study conducted jointly by Word Wildlife Fund (WWF) and ECC previously, found a number of large and medium-sized mammals including, Asian elephant, gaur, Asian golden cat, marbled cat, clouded leopard, sambar, Asiatic black bear and dhole.

The main objective of this study was to provide the NPNPA staff with some information on its elephant population, with a particular interest in identifying breeding-age males, evidence of breeding and to identify potential candidates for GPS collaring in the near-future.

Methodology

Ten camera traps were set around salt licks, paths and water sources where wild elephants were frequently spotted in Nam Poui during ranger patrols in 2022 and 2023. Four cameras were located in the west and six in the east (Fig. 1). Camera traps are still in use inside the park, some in the same locations, some in new areas, however the data described in this report is from January – April 2023.

Following Arivazhagan & Sukumar (2008) individuals were assigned to one of four categories:

- Calf: <1 year old
- Juvenile: 1–5 years old

- Sub-adult: 5–15 years old
- Adult: >15 years old

Individuals were only identified as adult males if there was clear evidence (tusk, penis, sign of musth and/or head size/body composition), otherwise they were assumed to be female. Body condition scoring followed Fernando *et al.* (2009) using a scale of 0–10.

Results and discussion

Two camera traps were stolen (ECC_002 + ECC_011) while all other camera traps captured photos of elephants. Cameras ECC_009 in Paklai District and ECC_007 in Phieng District provided the clearest photographs. Two distinct elephant groups were identified, one in the west of NPNPA and one in the east. Photos of both groups were captured within one day of each other and given the distance and topography it can be confidently assumed that these elephant groups did not consist of the same individuals. The two groups are separated by a large mountain range and have been known by our ranger teams as distinctly different for some years. Therefore, we are quite certain that these are two distinct populations, separate from each

other. We plan to GPS collar individuals from both groups to verify this in early 2024.

A total of 52 individuals were identified including two tuskless males, with 26 individuals identified in each location (Table 1). In each instance, the groups were captured moving as a unit, which made identifying the number of individuals and age estimation straightforward as they moved almost single file across the camera.

The results of this survey show the presence of on-going reproduction with adult males, adult females, and juveniles being present in both the east and the west of Nam Poui (Table 1). All individuals seemed to be in good health, with no visible injuries and with a body score range of 5–7. In conversations with locals from the surrounding area many had stated that there is only one breeding-age male across the landscape, which was not the case, with three separate adult males identified and at least three sub-adults, ensuring a new generation of breeders.

These results, although far from a complete survey of the wild elephants in NPNPA, is a positive step and demonstrate the applicability of camera trap studies for population surveys in Nam Poui and other areas in Laos. This ‘snapshot’ into the wild elephant population in Nam Poui provides a baseline to work from, something lacking for elephant populations across Laos. Organizations such as ECC, WWF and Association Anoulack are pushing to better understand and protect the remaining wild elephant populations in Laos. ECC has dedicated elephant monitoring patrol units and will attempt to collar wild elephants in Nam Poui in

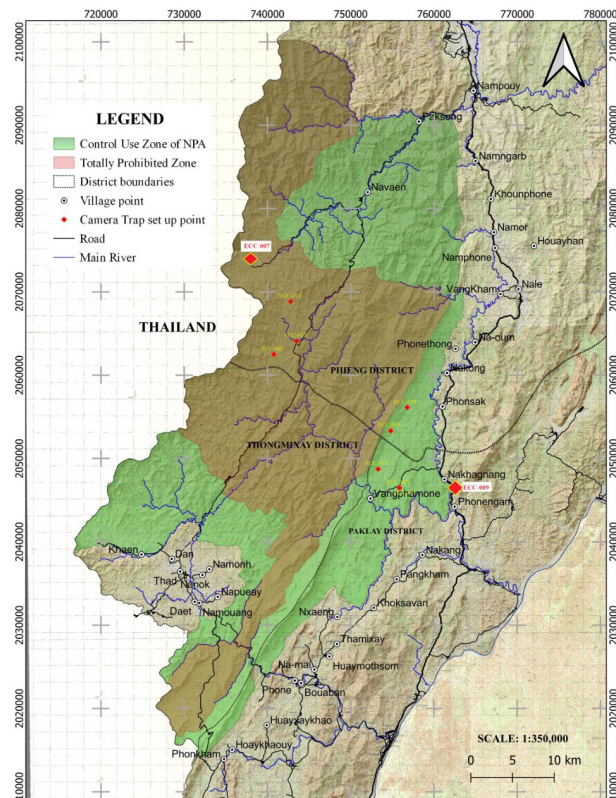


Figure 1. Camera trap locations in NPNPA.

Table 1. Elephants identified in Paklai (camera ECC_009) and Phieng (camera ECC_007).

	Paklai	Phieng
Calf	2	2
Juvenile	10	5
Female sub-adult	1	7
Female adult	9	10
Male sub-adult	3	0
Male adult	1	2
Total	26	26

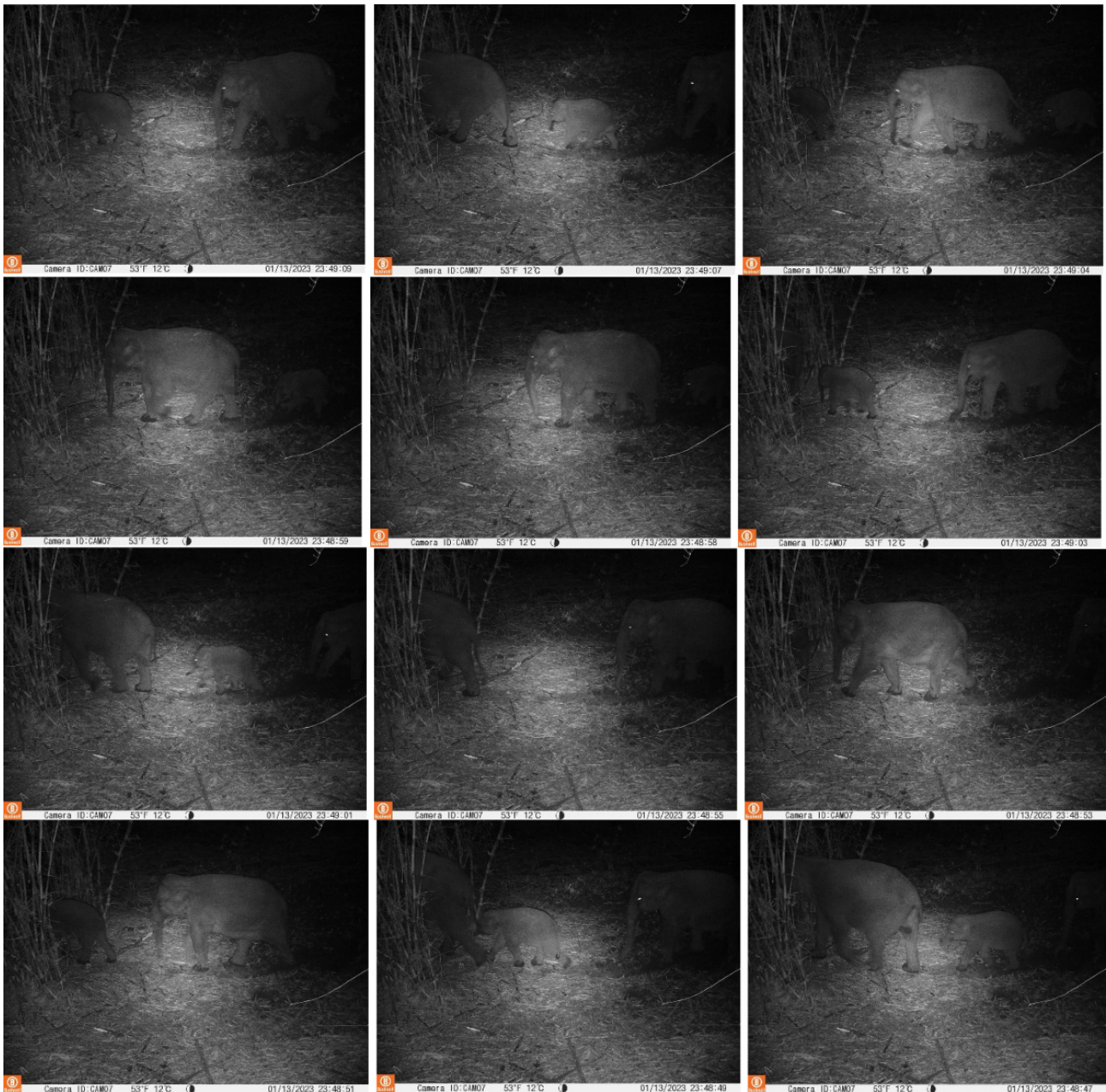


Figure 2. Elephants walking in a straight line past the camera ECC_007.

2024, together with assessing the genetic diversity of the captive elephant population. WWF works on law enforcement and will attempt a comprehensive population survey in Nam Poui in 2024.

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