

## Short Communication

Recent records of Asian elephant *Elephas maximus* in Virachey National Park, northeastern CambodiaKeith PAWLOWSKI<sup>1,\*</sup> & Gregory MCCANN<sup>2</sup><sup>1</sup> SUNY at Buffalo State College, Great Lakes Center, Buffalo, NY 14222, USA.<sup>2</sup> English Division, Chang Gung University, No. 259, Wenhua 1<sup>st</sup> Road, Kwei-shan, Taoyuan, 33375, Taiwan.

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The status of Asian elephants *Elephas maximus* in Virachey National Park (VNP) has long been poorly understood (M. Maltby & Thon S., pers. comm. 2017). In this article, we present the most recent records of Asian elephants from VNP in the Stung Treng and Ratanakiri provinces, northeastern Cambodia. To the best of our knowledge, the last wildlife surveys in VNP were undertaken by Conservation International in 2007 and by the Cambodia Protected Area Management Project in 2008 (Vuykeo N., pers. comm. 2017).

Over a three-year period from January 2014 to January 2017, we deployed 19 camera traps in the Veal Thom/Haling Halang area of VNP for a total of 5,659 camera trap nights. Seven camera traps were also deployed in the Yak Yeuk grassland area near the Laos border for 2,242 camera trap nights, providing a combined total of 7,901 camera trap nights (Fig. 1). Most of our field cameras were Bushnell 12MP Trophy Cam HD Essential Low Glow Trail camera traps (Bushnell Corporation, USA;  $n=14$ ), with four additional Reconyx HC600 Hyperfire camera traps (Holmen, USA) and one Covert camera trap (Lewisburg, USA). These were set approximately 20–100 cm from the ground, depending upon slope, vegetation and anchoring trees. All camera traps were active for 24 hours each day and recorded time, date, and temperature when triggered. Because our main goal was to conduct a baseline survey of small to large terrestrial mammals in VNP, camera trap locations were selected based on the presence of wildlife trails, runs, tracks,

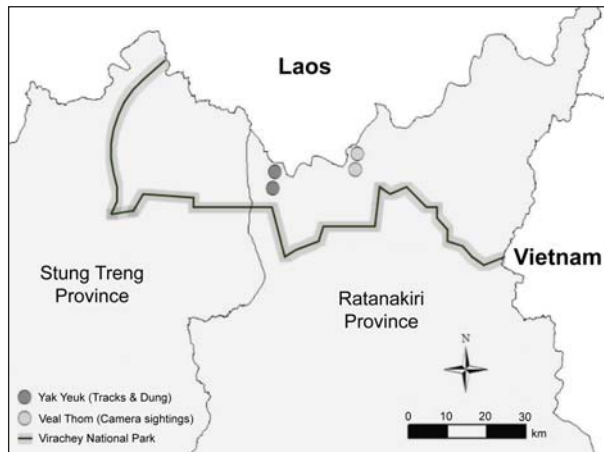
scratchings and wallows. Elephants were not specifically targeted, though cameras were placed opportunistically near trails, feeding areas and dung.

On 18 January 2015, elephant tracks and fresh dung were found in the Yak Yeuk grassland area of VNP near the Laos border in Veun Sai District (Fig. 2). The presence of elephants was also confirmed by local Kavet guides living in Kuan Nuok village of Veun Sai District which borders VNP to the south. The dung and tracks were observed leading to and surrounding large stands of bamboo (14.3224 N, 106.8019 E), which were highly disturbed due to apparent elephant feeding. One camera trap was placed along a trail leading towards the Laos border and another camera trap was deployed facing a large mud wallow, measuring approximately 10 × 15 m. Despite this, elephants were not recorded on our camera traps.

On 19 November 2016, camera station #6 was triggered 28 times by elephants which resulted in photographs of at least nine individuals, including a small infant walking close to its mother and judging by its size, a juvenile (Figs 3 & 4). The location (14.3450 N, 106.9823 E) was near the headwaters of the O Gan Yu River close to the Laos border at the base of Phnom Haling-Halang. Piles of elephant dung were found within three to four kilometres on trails to the east and west of this location, as well as at another location approximately six kilometres to the south. Almost one hour later the same day, camera station #11 (14.3415 N, 106.98570 E) was triggered

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**Fig. 1** Locations where Asian elephants were recorded by camera traps in Virachey National Park in 2016 and where tracks and dung were found in 2015.



**Fig. 2** Fresh elephant track found in the Yak Yeuk grassland area of Virachey National Park near the border with Laos on 18 January, 2015.



**Fig. 3** Adult elephant with young at the headwaters of the O Gan Yu River, near the base of Phnom Haling Halang in Virachey National Park on 19 November, 2016.



**Fig. 4** Juvenile elephant at the headwaters of the O Gan Yu River, near the base of Phnom Haling Halang in Virachey National Park on 19 November, 2016.



**Fig. 5** Adult elephant approximately four kilometres east of Phnom Haling Halang, Virachey National Park on 19 November, 2016.

by two adult elephants, resulting in three photographs. The elephants were standing fairly close to the camera and only their legs and torso were visible, indicating that they were either adults or sub-adults (Fig. 5). The distance between camera station #6 and #11 was approximately four kilometres and can be walked in around 1.5–2 hours. It is therefore possible that these animals were from the same herd, although this cannot be concluded with certainty.

At 01:02 hrs on 18 December 2016, camera station #6 was triggered by elephants 25 times. The images showed eight individuals including a small infant walking close to its mother. This would appear to be the same herd that triggered the camera trap station on 19 November.

We suspect that the lack of camera trap records for elephants in the Yak Yeuk grassland area may be due to seasonal movements or possible avoidance of humans, as there was increased logging in this area. Similarly, our records of elephants near the base of Phnom Haling-Halang may be due to its remote location and relatively undisturbed habitat.

#### National Context and Significance

It has been approximately 10 years since Asian elephants were camera-trapped in VNP, and our records demonstrate that elephants still exist at the site and provide evidence of recent breeding. The last known camera trap images of elephant from VNP were recorded in 2006 (M. Maltby, Thon S. & Vuykeo N., pers. comm. 2017) from the Siem Pang area, approximately 30 km west of our camera trap stations in Stung Treng Province. Prior to this, Asian elephants were recorded in VNP by camera traps between June 1999 and August 2001 (Gray *et al.*, 2012).

Although the overall population of elephants in Cambodia is unknown, the largest populations likely occur in the Cardamom Rainforest Landscape in southwestern Cambodia and Monduliri Province in eastern Cambodia (Gray *et al.*, 2017). Using capture-mark-recapture analysis of faecal DNA, Gray *et al.* (2014) estimated the Monduliri population to be approximately 300 individuals and 136 (SE  $\pm$  35) individuals in Phnom Prich Wildlife Sanctuary. Maltby & Bouchier (2011) estimated approximately 30 wild elephants in the Ratanakiri and Preah Vihear provinces with those in Ratanakiri being located in VNP.

The future of VNP is highly uncertain due to plans for a new road along the Laos border that would cut through the most inaccessible and pristine area of the park (McCann, 2017; Turton & Dara, 2017) where our records stem from. Virachey National Park and other protected areas in Ratanakiri Province are strongly impacted by large-scale illegal logging for the timber trade with Vietnam (Environmental Investigation Agency, 2017). This presents a serious threat to elephants in the landscape. Urgent measures should be taken by the government and NGOs in Cambodia to safeguard this wild elephant herd, which may be the last in Ratanakiri Province. For example, the proposed border road should be cancelled or redesigned to circumvent the area where elephants and many other species occur. Regular ranger patrols in this area would also help to ensure the long-term survival of elephants in VNP and the park could probably support higher numbers of elephants if poaching and snaring were reduced and effective protection measures put in place. To the best of our knowledge,

there have been no reports of crop-raiding or any other form of human-elephant conflict in recent years.

Because our elephant records stem from areas close to the border with Laos, it is likely that these represent a trans-boundary herd. The area directly north of VNP forms part of Nam Ghong Provincial Protected Area in Laos, but likely receives little formal protection from Lao authorities. Given the current status of elephant in Cambodia, any populations outside of the Cardamom Rainforest Landscape and Monduliri Province should be regarded as nationally significant. Virachey National Park comprises a vast (3,325 km<sup>2</sup>) and long undeveloped and un-demarcated mountainous border region with Laos, though construction of the proposed border road would change this. Additional studies should be carried out to determine if other elephant herds exist in the national park. Studies are also needed to determine the range of the herd we recorded because as this was located very close to the Laos border, national estimates on either side of the border could possibly double-count a trans-boundary population.

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