Effective Implementation of Payments for Environmental Services in Lao PDR

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PHOU KHAO KHOUAY NATIONAL PROTECTED AREA: A FIELD SURVEY OF GREEN PEAFOWL (*PAVO MUTICUS*)

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Abstract

This report presents results of a survey of the endangered Green Peafowl (*Pavo Muticus*) in Phou Khao Khouay (PKK) National Protected Area (NPA), conducted between 28th March to 3rd April, 2015 by participatory teams made of villagers from nearby villages and soldiers from PKK-NPA Management Unit. A three-day training workshop was first provided to the 12 participants, by experienced conservation biologists from the Lao Wildlife Conservation Association (Lao WCA), on basic techniques of Green Peafowl survey and conservation, including the use of navigation tools (compass, GPS, maps) and field data recording. Participants were then divided into six teams of two people to conduct the ground field survey. The target area was divided into 2x2 km-grid cells, and a central point was placed in each to provide a reference for the teams to use as listening posts that were spaced two kilometer apart. Given the current knowledge of presence and distribution of Green Peafowls provided by local villagers and NPA staff, we only focused our field survey on six grid cells (approximate 24 km^2 or 240 hectares in area). Listening for bird calls was conducted in the morning between 6:00am to 8:00 am, and the evening between 5:00pm to 6:00pm (peak calls of birds). Teams also walked to search for Green Peafowl signs (feathers, footprint, droppings), mainly nearby the waterholes along streams, in the day time after the completion of listening to bird calls. Listening at each point was made by a team for two consecutive days. This resulted in two mornings' and two evenings' observations at each point. Calls were recorded on data forms giving the detailed compass bearings, type of calls (males or females), times and the numbers of calls. Signs of birds were also recorded giving detailed information on GPS coordinates and other related information. Our findings provide clear evidence that the Green Peafowl remains in existence in the PKK-NPA. Of the six listening posts, four recorded Green Peafowl calls, which accounted for a minimum estimate of approximately 8 individuals (or clusters). Other signs of Green Peafowls, e.g., features and footprints, were also recorded by survey teams in two other surveyed grid cells where Green Peafowl calls had not been heard. Given the above findings it is suggested that immediate conservation actions are required to secure a viable population of this last remaining population of Green Peafowl in the Lao PDR. The major threats to the Green Peafowl, e.g., direct hunting, and collecting of its eggs, need to be removed. Participatory anti-poaching teams, made up of villagers and staff from the military's PKK-NPA conservation unit, should be established and supported to conduct continuous forest patrols, and a public awareness campaign in the target villages are a high priority. It is suggested that a specific regulation for species conservation needs to be developed, and effectively enforced through a participatory approach.

Keywords: Phou Khao Khouay National Protected Area; Green Peafowl survey

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[1] The training agenda, the data collection form, a list of paerticipants and a summary of field expenses is available from the author on request.

1. Introduction

The nowadays endangered Green Peafowl (*Pavo muticus*) once occurred widely across the Lao PDR. Today it remains only in the Phou Khao Khouay National Protected Area (PKK-NPA) and the Dong Khan Thoung Provincial Protected Area in Champask (Vongkhamheng, Phiapalath, Vongkhamheng, & Ounmany, 2012). The rapid decline of the Green Peafowl population over the last 30 years has been caused primarily by hunting and habitat loss (Evans & Timmins, 1996; Fuller & Garson, 2000).

The Green Peafowl has received little conservation attention despite the recognition of its conservation significance and the threats it faces. In the PPK-NPA, there have been records of Green Peafowl presence since the early 1990s (Duckworth, Salter, & Khounboline, 1999; Evans & Timmins, 1996), but its population status is still uncertain. This report presents the first systematic assessment of the Green Peafowl population in the PKK-NPA. The results of this survey will provide input to the development of strategies to conserve the species in Lao PDR.

2. Objectives

The primary purpose of this survey was to obtain reliable information on the abundance and distribution of the Green Peafowl in the PKK-NPA, upon which a conservation strategy can be developed to recover and secure a viable Green Peafowl population.

The specific objectives were:

- Establishment of participatory conservation teams for the Green Peafowl in the PKK-NPA;
- Capacity building of conservation teams, local villagers and PKK-NPA staff, through training in conducting a Green Peafowl field survey and applying conservation techniques; and
- Realisation of a Green Peafowl field survey using a scientifically sound approach to generate reliable data on its population status.

3. Methodology

The PKK-NPA was officially established in 1993. It is located about 40 km northeast of Vientiane Capital spanning across three provinces, namely, Vientiane Capital, Bolikhamxai and Vientiane. It covers about 2,000 km^2 stretching about 80 km from west to east, and up to 40 km from north to south.

The PKK-NPA contains a diversity of forest types including evergreen, mixed deciduous, dry dipterocarp and pine, all of which support habitats for several wildlife species of national and international conservation concern. Recorded key large mammals that inhabit the PKK-NPA include the Asian Elephants, Asiatic Black Bear, Sun Bear, Wild Dog (Jackal and Dhole), Southern Serow, Clouded Leopard, Sambar, Mouse Deer, Phayre's Langur, White-cheeked Gibbon, Rhesus and Pig-tailed Macaque, Civets and Otters. The endangered Green Peafowl (*Pavo Muticus*) is the most remarkable bird among the many bird species recorded within the PKK-NPA. The Green Peafowl was once common in the lowland of Lao PDR, but is now confined to only a few locations, and has become one of the rarest birds in the country (Vongkhamheng et al., 2012).

The Green Peafowl field survey was conducted in the south-western part of the PKK-NPA, where Green Peafowl presence was reported (see map) in the vicinity of Ban Nakhay, Xaythani district, Vientiane Capital. Hence, the survey effort was concentrated on an area of approximately 24 km^2 (or 240 ha).

4. Field survey

Staff training

From 28th to 30th March, 2015, a technical training workshop was organized in Ban Na Khai to familiarise twelve participants with basic conservation principles and survey techniques. One half of the participants were people from three local villages, the other half were staff from the military's PKK-NPA conservation unit. Several topics were introduced during the workshop including basic concepts of biodiversity conservation, a field sampling protocol, uses of navigation tools (compass, maps, GPS), and field data recording techniques. In addition to lectures, the participants were given the opportunity

to do practical exercises in order to ensure that they understood the survey techniques, and the proper use of the necessary field survey tools, such as GPS, geographic maps, compass, and data forms. Once everybody felt confident about the survey techniques and use of tools, participants were divided into six teams of two people (one military staff and one villager), were assigned to a target survey area and received all the necessary survey equipment.

Picture 1: Participants learn and practice the use of GPS and data forms during the training.

Picture 2: Workshop lecture by Dr. Chanthavy on basic ecological behaviour of the Green Peafowl.

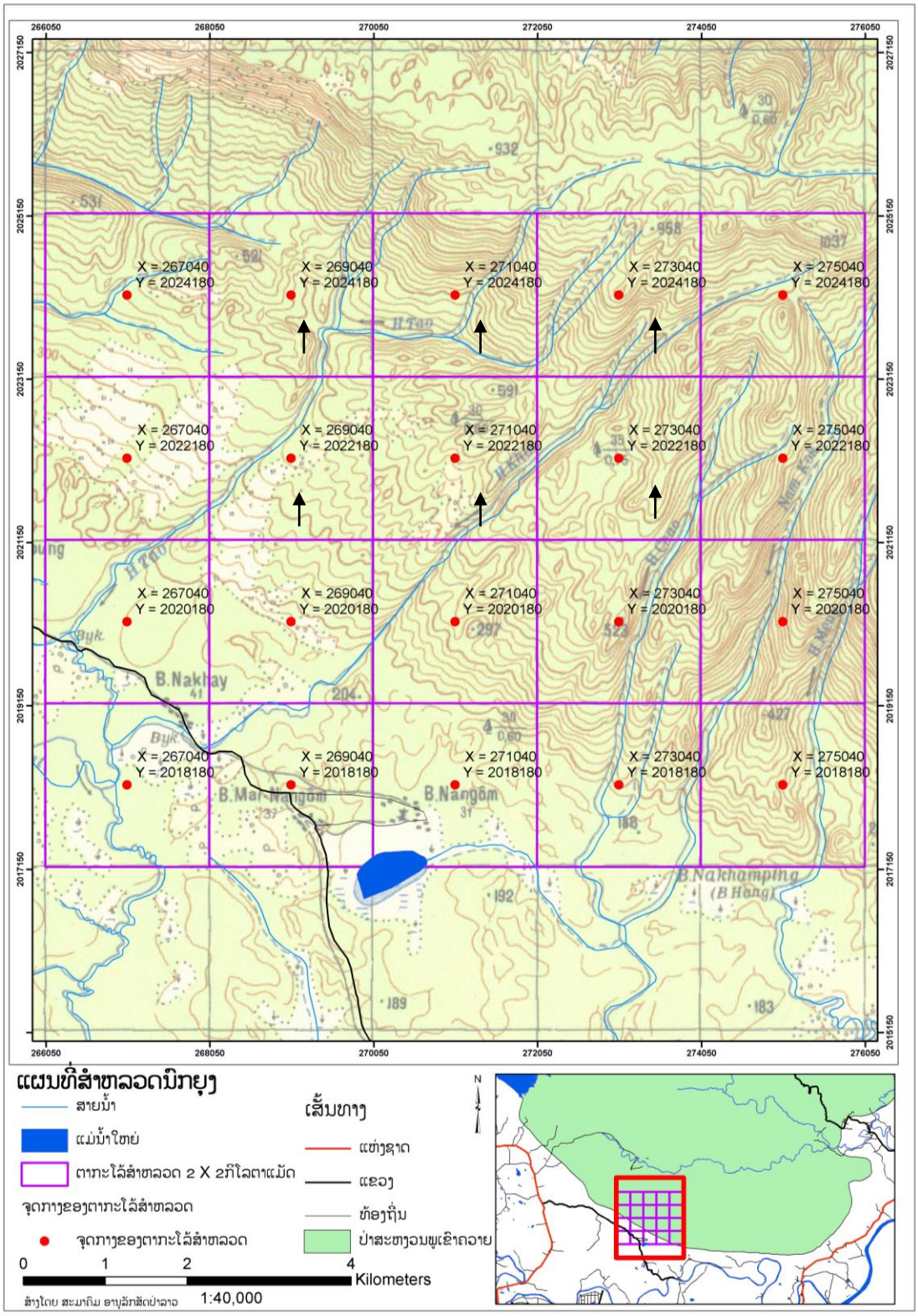

Figure 1: Grid map generated for the teams to use in the field. The effort was focused on the top middle six cells (arrows), in which the current Green Peafowl population were expected to be concentrated.

Listening posts

A grid-based map was produced and assigned to each team to use as reference in the field (see Figure 1). Each team was given an assignment to focus its survey effort on one 2x2km grid cell, using the GPS associated with a geographic map to locate a listening post and mark any evidence of Green Peafowl when encountered. The listening post was the central point in each grid cell, and these were spaced about two kilometers apart from each other. The reasoning behind this was to ensure independent counts as over a large distance the Green Peafowl calls cannot be heard.

Teams conducted listening counts simultaneously each morning between 6:00am to 8:00am, and each evening between 4:30pm to 6:30pm for two consecutive days. Standardized data forms were prepared, and handed over to each team to use for recording data at their listening post, and also during their walk while traversing from the camp to the point, or searching for Green Peafowl signs after the completion of a listening post survey. If they heard the Green Peafowl's call, they took a compass bearing from their location towards the direction of the call, and recorded the compass bearing, type of calls (males or females), time and the number of calls into the data form.

After the completion of the listening post in the morning, the team visited water holes along streams to search for signs of the Green Peafowl (e.g., footprints or feathers) to support the evidence of its presence in that grid cell or to generate evidence of its presence if calls were not made by birds because of human activities.

Picture 3: Equipment used for the Green Peafowl survey including GPS, geographic map, compass, and data form. At a listening post, a team laid out the map toward the north using a compass so that it allows them to locate and get compass bearing easily when hearing Green Peafowl calls.

Picture 4: A team member in the field, visiting the water holes during daytime.

5. Results

Six independent listening posts were active between 31st March and 2nd April, 2015. Of those, Green Peafowl calls were recorded at four listening posts, and 13 contacts with green peafowl evidence were made. This indicates the presence of a minimum of eight birds (or clusters of birds). On average, the mean number of contacts per listening point was 2.16 (range 0-8), and the mean minimum number of birds per listening point was 1.33 (range, 0-4). Other signs of birds were also recorded in grid cells where no calls were heard (see Figure 2).

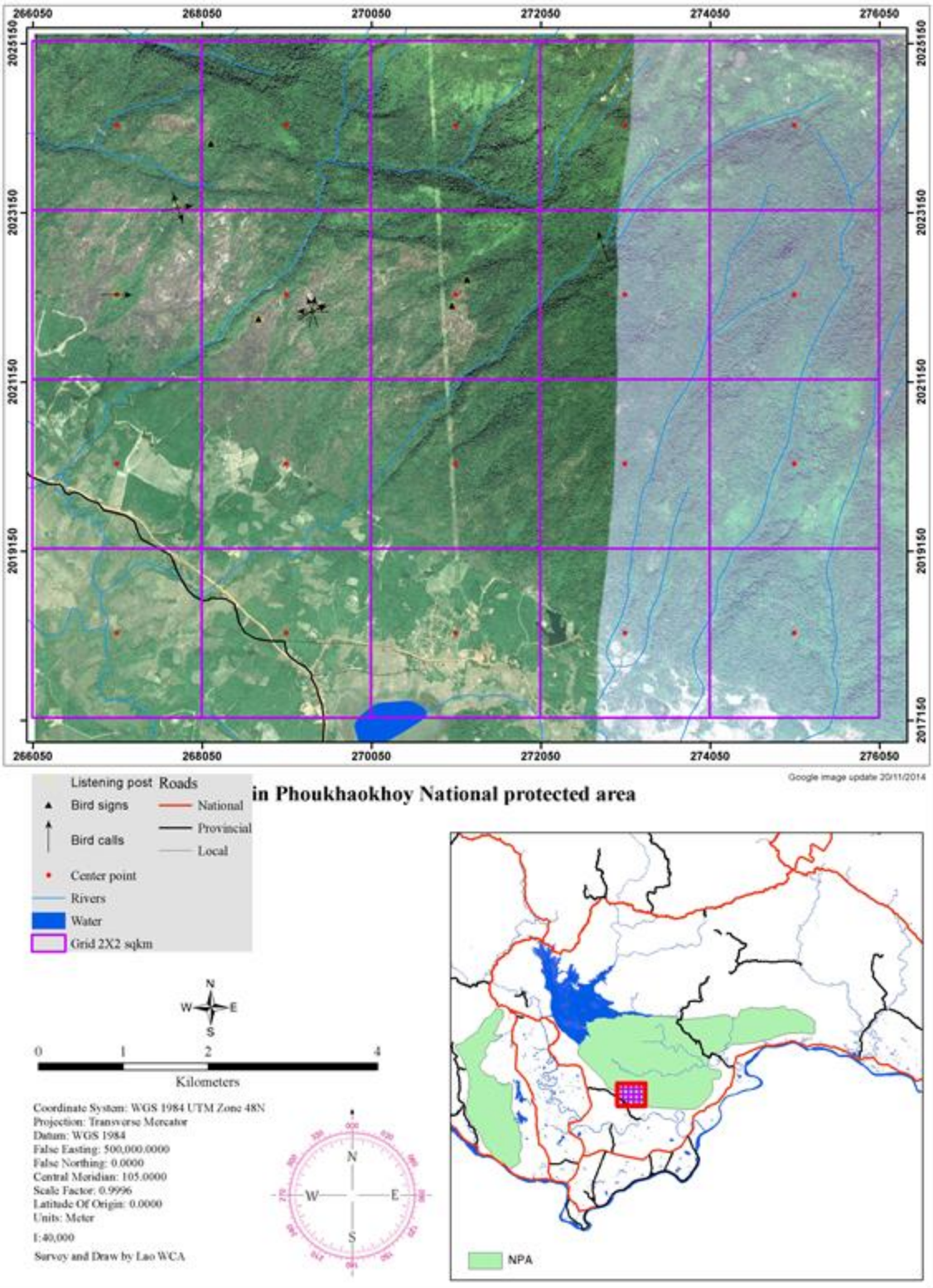

Figure 2: A map shows records of Green Peafowl calls and signs in the survey area (see legend for detail).

6. Discussion

Findings from this survey provide clear evidence that the PKK-NPA contains the last population of the endangered Green Peafowl within the Lao PDR. The survey was conducted across an area of 24km^2 (or six listening posts), where the presence of the Green Peafowl has been reported by villagers. The survey results suggest the presence of a minimum of eight birds (or bird clusters). Even though Green Peafowl presence has been reported in PKK NPA for many years, the results of this survey provide the first systematic estimate of the Green Peafowl population in the PKK-NPA. The estimate was based on field data collected by participatory teams that consisted of local villagers and military PKK-NPA staff.

Picture 4: Encounters with Ant's eggs

Given the surveyed area of about 24 km^2, the number of records of calls and the small sample size of listening posts (n= 6), it may be unreliable to draw conclusions about the Green Peafowl population density (i.e., number of Green Peafowls per unit of habitat area, e.g., per km^2). However, the data clearly indicate Green Peafowl presence in the area, with a minimum of eight clusters of Green Peafowls. The total number of Green Peafowls depends on the bird group sizes. Studies show that the solitary males are highly

territorial and form harems with no pair bond (Grimmett, Inskipp, & Inskipp, 1999). Females and juveniles travel in groups of two to six, and a breeding female lays four to six eggs between April and June (BirdLife International, 2001). Even though the current population of Green Peafowl is relatively small, the population is likely to recover within the PKK-NPA if the current threats (e.g., hunting and egg collection) are removed effectively and suitable and adequate habitat is available. The results, therefore, call for immediate conservation actions on the ground.

Picture 5: Bamboo rat caught by a local hunter

Based on the current work, a ground survey covering a larger area (conducted by experienced biologists together with the existing participatory teams) is highly recommended to determine the target area and to develop the conservation goals and actions. During the survey, villagers reported that hunting and the harvesting of ant's eggs and other non-timber forest products by outsiders were prevalent in the PKK NPA. It was likely that outside hunters shoot the Green Peafowl when they encounter them because it was easy to follow their noisy calls. Therefore, joint anti-poaching patrols of military and villagers should be urgently established to protect the Green Peafowl population from further hunting, and thus to secure a viable Green Peafowl population o at the site.

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