

**1.**

**- Project ID: 0380112;**

**- Project Title: Conservation of Green Peafowl in the Proposed 'A Yun Pa' Nature Reserve, Vietnam**

**2. Host country and site location: Proposed 'A Yun Pa' Nature Reserve, Iapa district, Gia Lai province, Vietnam**

**3. Forestry University of Vietnam**

**4. Overall aim summary**

A Yun Pa proposed nature reserve is one of a few sites still supporting large populations of Green Peafowl that has drastically declined in Vietnam (Birdlife International and FIPI 2001), yet the area remains inadequately surveyed. The overall aim of the project is to assess the status of Green Peafowl in A Yun Pa proposed nature reserve for guiding conservation efforts for Green Peafowl in Vietnam. Additionally, the project is focused at enhancing Green Peafowl conservation in A Yun Pa by raising conservation awareness among local communities and forest rangers.

**5. Authors:** Thinh Tien Vu, Toan Trong Giang, Thanh Nguyen Chi, Ha Tran Van, Kien Nguyen Van

**6. Permanent contact address:** Thinh Vu, Khoa QLTVR va MT, Dai hoc Lam nghiep, Xuan Mai, Chuong My, Ha Noi, Vietnam; Email: vutienthinh@hotmail.com

11/28/2013

## Table of Contents

Acknowledgements.....	3
Section 1:.....	4
Summary .....	4
Introduction .....	5
Project members.....	6
Section 2:.....	8
Aim and objectives.....	8
Methodology.....	8
Outputs and Results.....	10
Achievements and Impacts.....	12
Section 3:.....	14
Conclusion.....	14
Problems encountered and lessons learnt .....	14
In the future .....	15
Section 4:.....	16
Appendices.....	16
Bibliography .....	23

## Acknowledgements

The project would not be possible with the funding and support, guidance from CLP. We would like to thank CLP and the foundation's staff for facilitating the project implementation. We would also like to thank Dr. Doherty at Colorado State University supporting the project proposal. Our Special thanks go to Birdlife Indochina for their advices during the project implementation.

We would like to thank Forestry University of Vietnam, Institute of Forest Ecology and Environment, Bac Giang Agro-forestry University for allowing us to participate in the project.

We would like to thank the Gia Lai province's Agriculture and Rural development department and Chu Mo protection forest for allowing the project implementation in A Yun Pa proposed nature reserve.

We would also like to thank Ia KDam, Ia Tul, Chu Mo, and Yang Nam communes' leader for access to their land and dispersing the conservation awareness to local communities.

Our special thanks go to Ia Pa district's secondary school's teachers and pupils who participated in the presentation section and will be the key people to dispersing the conservation awareness to local communities.

Finally, we thank forest rangers and local people for their assisting the project and attending the presentation.

## Section 1:

### Summary

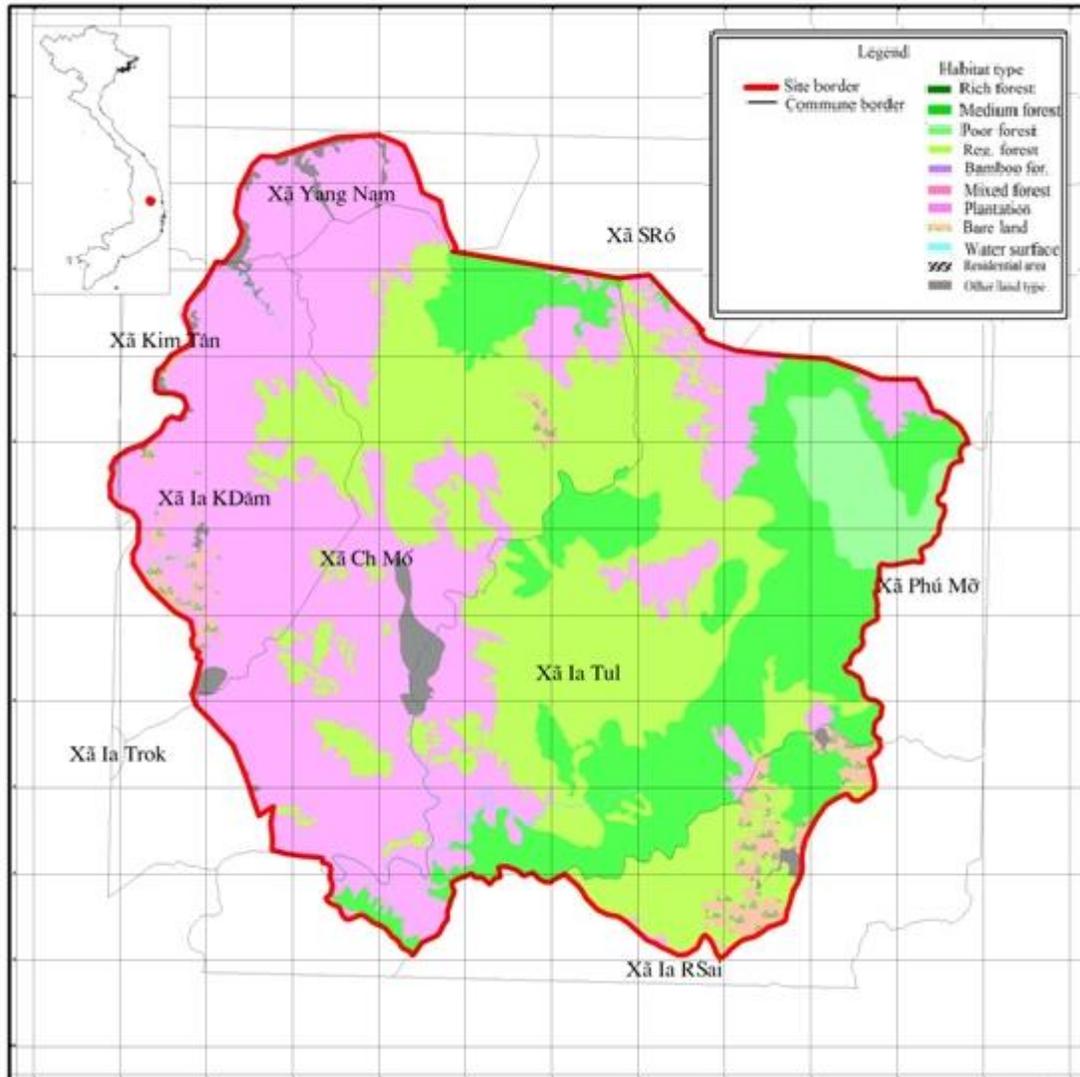
A Yun Pa proposed nature reserve (AYPNR) is one of a few sites still supporting large populations of Green Peafowl that has drastically declined in Vietnam (Birdlife International and FIPI 2001), yet the area remains inadequately surveyed. Therefore, we focus on the following objectives: (1) providing information on the current status and distribution of Green Peafowl populations in the nature reserve; (2) training team members and rangers in wildlife monitoring and conservation; (3) raising awareness for conservation among the local community; and (4) contributing to establishing standard methods for surveying and monitoring Green Peafowl. Fifty four Green peafowl groups were detected during the survey. Green peafowl mainly distribute in the dry forest habitat. The estimated number of Green peafowl groups in AYPNR is 181. A Yun Pa is considered as the most important site for conserving Green peafowl in Vietnam. The attitude of local people and forest rangers toward conserving Green peafowl in particular and natural resources in natural has been much improved after the project's conservation education activities. The species will be better protected after the project and especially after A Yun Pa becomes part of the protected area system in Vietnam.

## Introduction

Green Peafowl is the galliform species at most immediate risk in Indochina. Green Peafowl populations have dramatically declined or even disappeared, in most of its historical range in past decades (Brickle et al. 2008). However, actions for conserving them have not been seriously implemented. The most intense survey for Green Peafowl in Vietnam was conducted more than a decade ago in a part of its distribution range (Brickle et al.1998).

A Yun Pa proposed ature reserve (AYPNR) is one of a few sites still supporting large populations of Green Peafowl (Birdlife International and FIPI 2001), yet the area remains inadequately surveyed. The site includes Chu Mo protection forest and the surrounding areas belonging to Chu Mo, Ia Kdam, Ia Tul communes (Ia Pa district) and Yang Nam commune (Kong Chro district), Gia Lai province. Total area of the site is 55,068ha, including 21,817 ha of dry forest that is suitable for Green Peafowl. This area is one of the few remaining sites supporting a largest area of dry forest in Vietnam. Since the record of Green Peafowl in 2001, the population and its distribution is poorly understood. Therefore, the conservation importance of the site is till ignored. A Yun Pa area still lays out side the protected areas of Vietnam.

Several people in different institutions involved in the project, including Vietnam Forestry University, Institute of Forest Ecology and Environment, Bac Giang Agro-forestry university, and A Yun Pa Nature reserve. Accademic institutions focusing conducting the survey while the protected area and local communities assisted the survey and their conservation awareness were raised during the project implementation.



**Figure 1. Map of the study site**

### Project members

List the project members, giving brief details of their relevant qualifications, experience, current occupation and employer, and their main roles in the project. Where relevant give an indication of the age group.

1. Tinh Vu, Project leader

Age: 33

Education with highest level completed: Doctor of Philosophy in Fish, Wildlife, and Conservation Biology

Current Employers:

- Institute for Forest Ecology and Environment, Forestry University of Vietnam (Researcher)
- Wildlife Management Department, Vietnam Forestry University (Lecturer, teaching wildlife management and biodiversity class; doing researches in wildlife ecology and conservation)

Skills and experience: The project leader has participated in several wildlife survey projects and has skills and experience in sampling design, field survey, data analysis and writing report. Additionally, the project leader has experience in working with local people and team members.

2. Toan Giang: Team member, field surveyor

Age: 25

Education with highest level completed: Master in Forest Resource Protection and Management, the Forestry University of Vietnam.

Current Employer: Institute of Forest Ecology and Environment (Researcher)

Skills and experience: Field survey in forest ecosystem

3. Name: Thanh Chi, Team member, data analysis

Age: 29

Education with highest level completed: Master in Forest Resource Protection and Management, the Forestry University of Vietnam.

Current Employer: Bac Giang Agro-Forestry University, (Lecturer, teaching wildlife management class);

Skills and experience: Mr. Thanh has experience in field survey and data analysis, GIS

4. Ha Tran: Team member, field surveyor

Age: 24

Education with highest level completed: Bachelor in Forest Resource Protection and Management, the Forestry University of Vietnam.

Current Employer: Vietnam Administration of Forestry

Skills and experience: Field survey in forest ecosystem

5. Kien Nguyen: Team member, field surveyor

Age: 23

Education with highest level completed: Bachelor in Forest Resource Protection and Management, the Forestry University of Vietnam.

Current Employer: Vietnam Administration of Forestry

Skills and experience: Field survey in forest ecosystem

## Section 2:

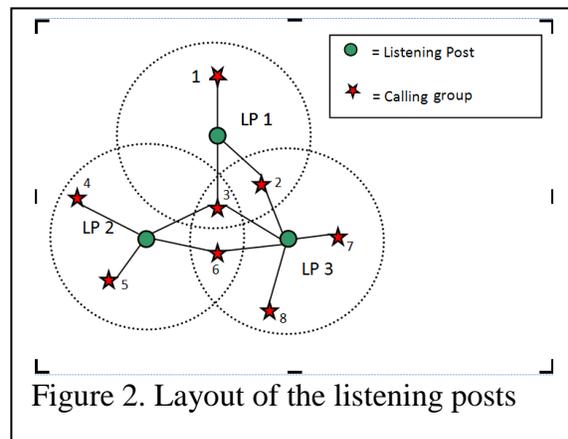
### Aim and objectives

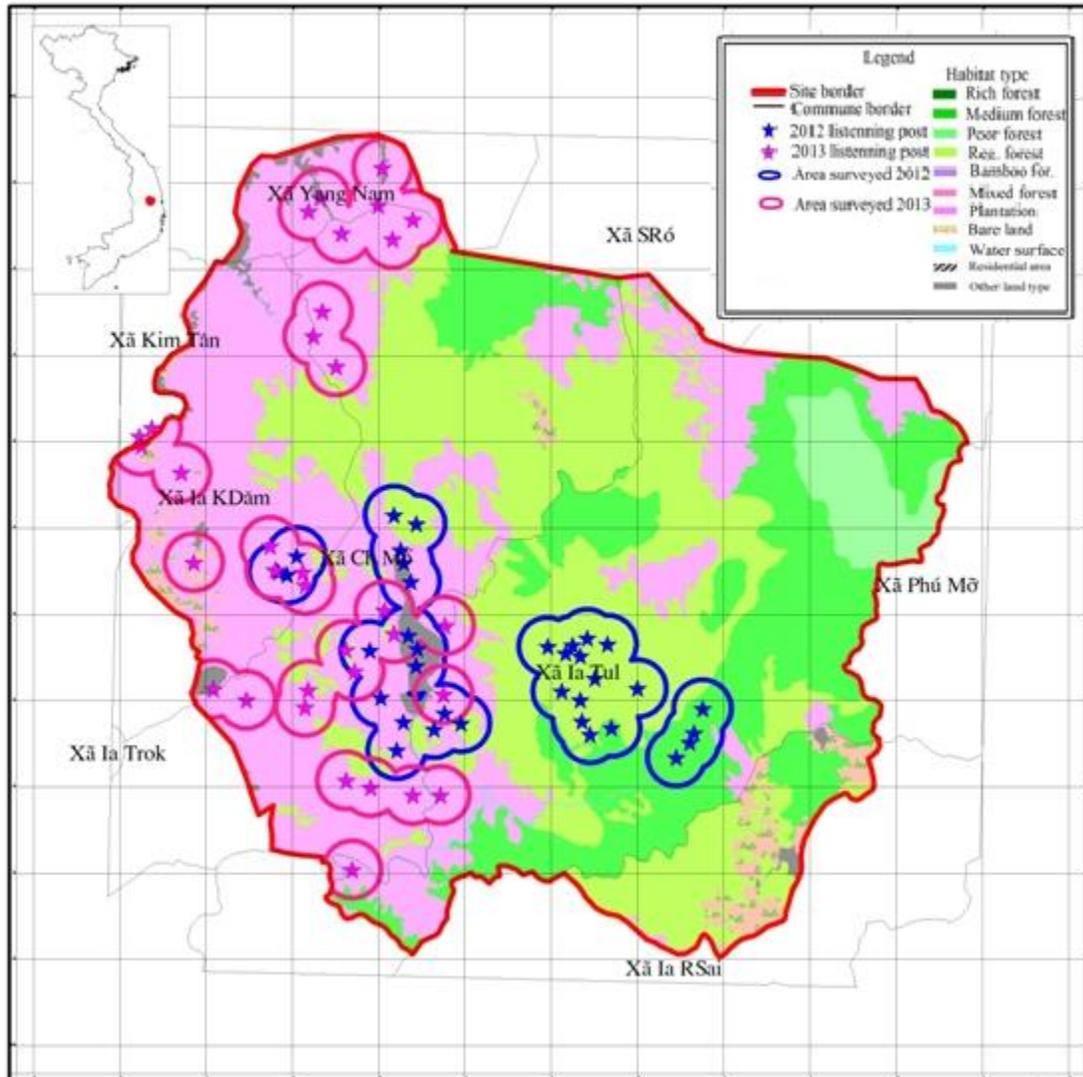
Green Peafowl is the galliform species at most immediate risk in Indochina. The species has dramatically declined, or even disappeared, in most of its historical range in past decades. Therefore, the overall goal of the project is to make contributions to understanding the status and distribution, as well as to save one of the most endangered bird species in Vietnam. The purposes of the project are: (1) assessing the status of Green Peafowl in A Yun Pa natural reserve; (2) enhancing capacity in wildlife monitoring and conservation; and (3) reducing pressures, especially hunting activities by local community members. In order to achieve these purposes, we will focus on the following objectives: (1) providing information on the current status and distribution of Green Peafowl populations in the nature reserve; (2) training team members and rangers in wildlife monitoring and conservation; (3) raising awareness for conservation among the local community; and (4) contributing to establishing standard methods for surveying and monitoring Green Peafowl. The fourth objectives was not fully achieved since we could not estimate the daily calling probability of Green peafowl.

### Methodology

Interview local people: interviews will be used as an additional information source for the report and will aid in the design of field surveys. Information gathered will include the status, past and current distribution, habitat preference, etc. A diverse number of local people ranging from villagers, hunters, to forest rangers will be interviewed before surveys commence.

Field surveys: The calls of male Green Peafowl are very loud and can be heard at a distance up to about a kilometer (Bricke et al.1998). Therefore, a standardized point count method was used to detect the presence of Green Peafowl calls during the breeding season. Three teams work simultaneously to locate bird locations precisely. Survey was conducted in early morning and late afternoon when birds are most active. The number of calling males, time, frequency, and types of call, habitat, coordinates, bearing angle, and hearing distance was recorded. Thirty eight listening posts were surveyed in 2012 and 35 listening posts were surveyed in 2013. With the maximum hearing distance of 1km, an area of 6621.6ha was surveyed in 2012. That of 2013 is 7570ha. About 40% of the dry forest area were surveyed during the project implementation.





**Figure 3. Listening post and surrounding area surveyed**

Green Peafowl groups were also approached to identify group compositions and collect behavioral data. We also detected the presence of peafowl through other signs such as feathers and footprints. Surveyors also recorded threats to the species. Threats were identified during the field survey.

Data analysis: Locations of bird groups were determined through triangulation using the angle and distance from surveyors because there were overlap among listening posts. Different groups were differentiated by their locations. Two different calling individuals were differentiated if they were detected more than 400m apart because home range was reported to be a circle of radius of about 192m (Zainal-Zahari et al. 2001) and the species is territorial.



**Photo 1. Dry forest habitat**

Raising awareness: We raised the awareness for conservation among local communities by hiring local people to work on the project and by providing presentations to local communities, secondary schools, and protected area's staff and forest rangers. Presentations focused on the values of biodiversity and the need for conserving targeted species including Green peafowl and other natural resources. Shirts depicting the species and the “message” to conserve endangered species were distributed to local people.

### Outputs and Results

The project has identified A Yun Pa as the most important site for conserving Green peafowl in Vietnam. 54 Green peafowl groups were detected during the survey of that 53 groups detected in 2013. Of those 53 groups, 52 groups detected in the dry forest. The number of Green peafowl detected in 2013 is higher because it was conducted in early breeding season and mainly focus on dry forest. The information, location of groups detected are listed in the Appendix.

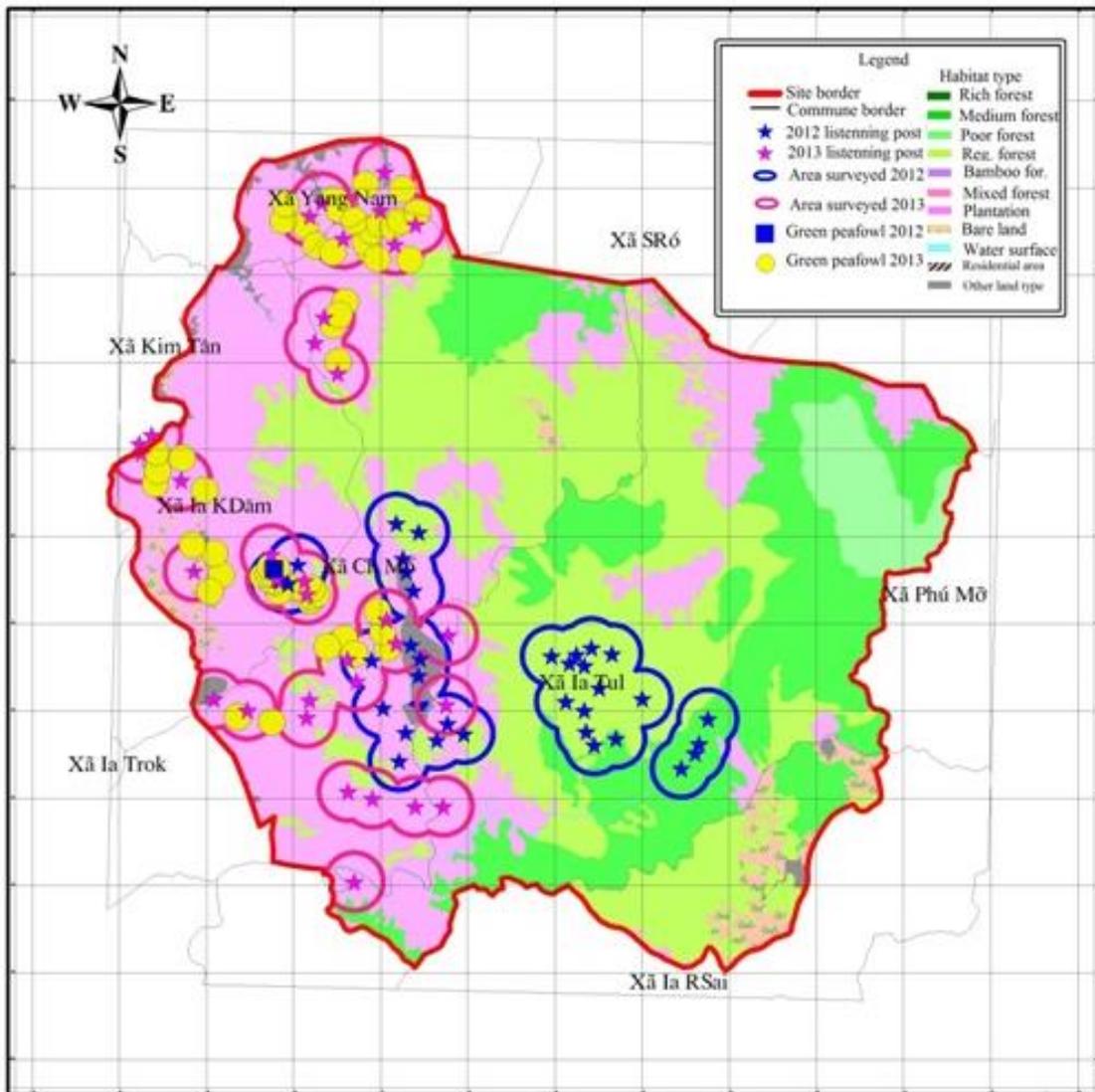


Figure 4. Locations of Green peafowl groups detected during the survey

Area that is suitable for Green peafowl is: 23,358ha. The suitable habitat of the species surveyed in 2013 is 6713ha. Estimated density is 0.0077 groups/ha (0.77 group/km<sup>2</sup>). The estimated number of Green peafowl groups in AYPNR is 181. The population mainly distribute in the dry forest habitat in the eastern part of the area, especially in Yang Nam and Ia KDam communes. Hunting and the agriculture encroachment are the main threat to the species in the area, especially in the southern part of Chu Mo commune. Intense efforts were spent at the area but no Green peafowl were detected because this area is close to local communities. Illegal selective logging is also another important threat to the species.



Photo 2. Green peafowl feather detected in local community

Three meeting and presentations were organized at different places. One presentations on the values of biodiversity, Green peafowl and the need for conserving the species were held at the secondary schools. Twenty five pupils and some teachers have attending the presentation and received the T-shirt with the message "Conserving Green peafowl is conserving the beauty of the Central Highland" and "You and me save Green peafowl altogether".



Photo 3. Conservation awareness raising at Ia Pa secondary schools

One presentation was organized at the Chu Mo protection forest head quarters aiming at forest rangers. 22 forest rangers attend the presentation. Forest rangers also received the T-Shirts.



**Photo 5. Presentation at Chu Mo protection forest**

A meeting was hold at Yang Nam commune. Local commune leaders was introduced the status of Green peafowl in the nearby forest and also received T-Shirts.

### **Achievements and Impacts**

Several achievements were obtained and these will be very helpful for the conservation of Green Peafowl in Vietnam.

- Information on a large population of Green Peafowl in Vietnam was obtained. With 54 Green peafowl groups detected and 163 ones estimated, besides Yok Don national park, A Yun Pa area is considered one of the sites still conserving the largest population of the species in Vietnam. The results of the project is also helpful for guiding efforts for conserving Green peafowl in Vietnam. Conservationists and manager is now have more information on the distribution of the species to direct conservation efforts.

- From the results of this survey, A Yun Pa is now received the highest priority for extending the protected area system in Vietnam due to its faunal diversity and high diversity of ecosystems including dry forest, semi-evergreen forest, and evergreen forest (Ministry of Resource and Environment, 2013, unpublished). A workshop for identifying new potential protected area was

held by Ministry of Resource and Environment and we introduced A Yun Pa area. Being in the protected areas of Vietnam means that the area will receive increased levels of protection.

- Saving Green Peafowl and other wildlife is now a important mission of Chu Mo protection forests because all the staffs there would like the site become natural reserve or national park (in the protected area system). Becoming a part of the nature reserve or national park system, they will have permanent jobs and higher salary. Additionally, the leader of the protection forest would extend the work we have conducted to collect data for his master thesis.

- The awareness of the conservation among forest rangers and local people were significantly raised. Conservation education actives in the project was evenly scattered in all communes surrounding the Green peafowl habitat sites. Most of pupils attending the presentations belong to ethnic minorities that rely on forest resources for subsistence. The conservation awareness will be further dispersed to the whole communities by those selected pupils.

- Team member capacity were highly increased during the project implementation. Team members have gained practical experience in field survey, especially for the ecosystem in southern Vietnam and data analysis.

That most of the project's objectives have been met. We strongly believe that information from the project will be useful for Green peafowl conservation in Vietnam and the attitude of local people and forest rangers toward conserving Green peafowl in particular and natural resources in general has been much improved after the project.

### Section 3:

#### Conclusion

- Fifty four Green peafowl groups were detected during the survey in 2012 and 2013.
- Green peafowl mainly distribute in the dry forest habitat in Ia KDam, Chu Mo and Yang Nam communes. Area that is suitable for Green peafowl is: 23,358ha.
- Estimated density is 0.0077 groups/ha (0.77 group/km<sup>2</sup>). The estimated number of Green peafowl groups in AYPNR is 181. The project results show that, A Yun Pa is considered as the most important site for conserving Green peafowl in Vietnam.
- The attitude of local people and forest rangers toward conserving Green peafowl in particular and natural resources in general has been much improved after the project. A Yun Pa is now received the highest priority for extending the protected area system in Vietnam. We strongly believe that the species will be better projected after the project and especially after A Yun Pa becomes part of the protected area system in Vietnam.

#### Problems encountered and lessons learnt

- Which project activities and outcomes went well and why?
  - The project preparation went well because team members has skills in conducting wildlife surveys.
  - Field survey went out because team member has experiences and was technically trained at the beginning of the survey.
  - Conservation awareness raising activities went well because team members has modifications to effectively raise the conservation awareness among local communities.
  
- Please detail any problems that the project encountered or deviations from original project plans. Describe how these problems were addressed and what solutions were found to deal with these issues.
  - The field survey was not completed in 2012 because we started to survey in a late breeding season. During that time, Green Peafowl did not call frequently and we did not detect many. Therefore, we organized another survey in 2013, in a early season and the outcome of the adjustment is very good.
  - Participation of field team members can be influenced by their tasks at the institutions and personal issues. But we found another similar person to participate in the field survey.
  - Data analysis plan and final report writing were changed because team members sometimes busy with other duties at their institutions.
  
- Briefly assess the specific project methodologies and conservation tools used.

The main method for Green peafowl survey is standardized point count through species' calls. However, in some situations, the call is very short and sudden, therefore, estimate of species location can be inaccurate. Therefore, in Green peafowl monitoring, rather than estimating number of groups, conservationist can estimate the occupancy

rate. Monitoring occupancy rate can be less affected by inaccuracy in locating the species group location.

Methods for changing the local people attitude toward biodiversity conservation used in the project is effective. Organizing presentation, meeting and distributing T-shirts as gifts is helpful in dispersing the conservation awareness among local communities.

- Please state important lessons which have been learnt through the course of the project and provide recommendations for future enhancement or modification to the project activities and outcomes.
  - In 2012, the survey was carried out in late breeding season therefore, the species did not emit call frequently. We had to change the field survey plan and extended the survey to 2013 because we did not have enough understanding of the biology, especially the calling behaviour of the targeted species. This behaviour might also change from region to region. We think that better understanding of the biology of the targeted species will contribute to the success of the project. Therefore, we would like to advise other grantees to choose the species and areas that you know well.
  - One of the most effective approaches we detected in this project is convincing the protected forest leaders to use and extend the study for their academic purposes.
  - In Green peafowl monitoring, rather than estimating number of groups, conservationists can estimate the occupancy rate. Monitoring occupancy rate can be less affected by inaccuracy in locating the species group location.

#### In the future

- We have been invited to the meeting for suggesting and planning new protected areas in Vietnam. We nominated A Yun Pa as the first priority site based on the project results. Scientifically, we will convince the conservation agency to establish a new nature reserve at A Yun Pa. We will publish our findings to strengthen the importance of A Yun Pa in biodiversity conservation.
- We will be seeking for other projects for monitoring and conservation of A Yun Pa in the near future.
- The Chu Mo protected forest leader would like to extend our surveys for his master thesis in the future. We will keep in touch with him and help him during his project implementation.
- We will consider further survey and conservation awareness raising activities in the surrounding areas of A Yun Pa because these areas also support dry forest habitat.

## Section 4:

### Appendices

#### Appendix 1. Expenditure used in the project

Receipt number	Date	Description	Unit costs	Quantity	Total price in local currency	Total price, US \$
<b>Administration</b>					<b>12050000</b>	<b>87.8</b>
A-1	2012-2013	Telecommunication and internet (4 months)	450000	4	1800000	87.8
<b>Reconnaissance</b>					<b>114330000</b>	<b>5859.9</b>
B-1	15/5/2012	Medical supplies	1020000	2	2040000	99.5
B-2	5-6/2012 and 3-4/2013	Lodging for team members in the study site (3 people x 16 days)	220000	48	10560000	515.1
B-3	5-6/2012 and 3-4/2013	Food for field assistants (4 people x 39 days)	170000	156	26520000	1293.7
B-4	5-6/2012 and 3-4/2013	Food for team members in the field, during travel, training, interview, presentation and Shirt distribution, and preparation for the field work (3 people x 55 days)	170000	165	28050000	1368.3
B-5	5-6/2012 and 3-4/2013	Hiring assistants during the field survey for guiding through the local terrain, surveying with the team members, managing camp, and porter: 4 people x 39 days	300000	156	46800000	2282.9
B-6	7/11/2013	Lodging for one team member during analysis and report writing period (1 x 16 days)	300000	16	4800000	234.1
B-7	7/11/2013	Food for team member during data analysis and report writing period (3 people x 16 days)	170000	8	8160000	66.3
<b>Equipment</b>					<b>84035000</b>	<b>4918.9</b>
C-1	13/5/2012	Binoculars	6150000	2	12300000	600
C-2	13/5/2012	Mp3 player + amplifier	2010000	2	4020000	196.1
C-3	13/5/2012	GPS	9220000	2	18440000	899.5
C-4	13/5/2012	Batteries	20000	100	2000000	97.6
C-5	13/5/2012	Headlamps	110000	6	660000	32.2

Receipt number	Date	Description	Unit costs	Quantity	Total price in local currency	Total price, US \$
C-15	13/5/2012	Digital camera	6300000	1	6300000	307.3
C-16	13/5/2012	Lense	10200000	1	10200000	497.6
C-6	14/5/2012	Compasses	410000	2	820000	40
C-7	14/5/2012	Field clothes	307500	6	1845000	90
C-8	14/5/2012	Shoes 06 sets	205000	6	1230000	60
C-9	14/5/2012	Backpacks	512500	5	2562500	125
C-10	14/5/2012	Rain jackets	102500	7	717500	35
C-11	14/5/2012	Notebooks + Stationery	1000000	1	1000000	48.8
C-12	14/5/2012	Insect repellent and	20000	8	160000	7.8
C-13	14/5/2012	Leech socks	40000	20	800000	39
C-14	14/5/2012	Snake gaiter	2460000	1	2460000	120
C-17	14/5/2012	Hammocks	620000	7	4340000	211.7
C-18	14/5/2012	Tents	5150000	1	5150000	251.2
C-19	14/5/2012	Sleeping bags	1270000	3	3810000	185.9
C-20	14/5/2012	Cooking Utensils +bowl	710000	2	1420000	69.3
C-22	14/5/2012	Books	600000	3	1800000	87.8
C-23	15/5/2012	Maps	2000000	1	2000000	97.6
C-21	27/2/2013	T-shirts	240000	70	16800000	819.5
<b>Transportation</b>					<b>8000000</b>	<b>1326.8</b>
E-1		Travel from the study site back to university (3 people x 2 years)	1600000	6	9600000	468.3
E-2		Taxi from the bus station to the study sites, from working institutions to the bus station	2400000	4	9600000	468.3
E-3		Local travel (20 days)	400000	20	8000000	390.2
<b>Workshop</b>					<b>8000000</b>	<b>273.1</b>
D-1	Apr-13	Hiring projectors (two times, 4 days)	1600000	6	9600000	78
D-2	5-6/2012 and 3-4/2013	This expense was used for a lunch during the workshop day. The presentation focused on the project introduction, biodiversity monitoring and Green peafowl conservation for raising conservation awareness	2400000	4	9600000	195.1
<b>TOTAL</b>					<b>255815000</b>	<b>12466.6</b>

**Appendix 2. Information on the listening posts surveyed in 2012 (Projection: Vn2000)**

No	Habitat	X	Y	Commune
1	Regeneration forest	242013	1492569	Ia Tul
2	Regeneration forest	242008	1491034	Ia Tul
3	Medium broadleaved evergreen forest	245352	1489038	Ia Tul
4	Regeneration forest	241497	1492663	Ia Tul
5	Regeneration forest	242258	1493190	Ia Tul
6	Regeneration forest	241745	1492948	Ia Tul
7	Regeneration forest	242960	1492980	Ia Tul
8	Regeneration forest	240879	1492900	Ia Tul
9	Regeneration forest	242516	1491796	Ia Tul
10	Regeneration forest	242352	1489841	Ia Tul
11	Regeneration forest	241369	1491342	Ia Tul
12	Medium broadleaved evergreen forest	243095	1490067	Ia Tul
13	Regeneration forest	242069	1490301	Ia Tul
14	Medium broadleaved evergreen forest	245822	1489563	Ia Tul
15	Medium broadleaved evergreen forest	246263	1490739	Ia Tul
16	Medium broadleaved evergreen forest	245964	1489886	Ia Tul
17	Regeneration forest	243999	1491436	Ia Tul
18	Dry forest	235859	1490275	Ia Tul
19	Dry forest	235079	1491120	Chu mo
20	Regeneration forest	237864	1490229	Ia Tul
21	Dry forest	237291	1490584	Ia Tul
22	Other land type	236350	1492820	Chu mo
23	Dry forest	232148	1496044	Ia KDam
24	Dry forest	231814	1495398	Ia KDam
25	Dry forest	235629	1489291	Chu mo
26	Other land type	236038	1493283	Chu mo
27	Other land type	236116	1495155	Chu mo
28	Other land type	235875	1495805	Chu mo
29	Regeneration forest	236307	1497162	Chu mo
30	Regeneration forest	235535	1497473	Chu mo
31	Dry forest	231806	1495402	Ia KDam
32	Dry forest	236930	1490019	Ia Tul
33	Dry forest	235766	1496255	Chu mo
34	Dry forest	237291	1490584	Ia Tul
35	Dry forest	231507	1495491	Ia KDam
36	Other land type	236298	1492225	Chu mo
37	Dry forest	236930	1490019	Ia Tul
38	Dry forest	234694	1492762	Chu mo

**Appendix 3. Information on the listening posts surveyed in 2013 (Projection: Vn2000)**

<b>No</b>	<b>Habitat</b>	<b>X</b>	<b>Y</b>	<b>Commune</b>
1	Dry forest	231409	1495552	Ia KĐăm
2	Dry forest	233864	1492781	Chu Mo
3	Dry forest	235529	1493350	Chu Mo
4	Dry forest	237252	1491228	Ia Tul
5	Dry forest	228577	1495824	Xã Ia KĐăm
6	Dry forest	237304	1493624	Chu Mo
7	Dry forest	231227	1496391	Xã Ia KĐăm
8	Dry forest	235207	1494153	Chu Mo
9	Dry forest	231418	1495569	Xã Ia KĐăm
10	Dry forest	232373	1495484	Xã Ia KĐăm
11	Dry forest	234167	1492038	Chu Mo
12	Dry forest	232453	1495034	Xã Ia KĐăm
13	Dry forest	233054	1504549	Chu Mo
14	Dry forest	232559	1508036	Yang Nam
15	Other land type	235136	1509553	Yang Nam
16	Dry forest	236195	1507743	Chu Mo
17	Dry forest	227117	1500500	Kim Tan
18	Dry forest	233520	1502634	Chu Mo
19	Dry forest	233716	1507264	Chu Mo
20	Dry forest	235490	1507061	Chu Mo
21	Dry forest	228137	1498946	Xã Ia KĐăm
22	Dry forest	232737	1503687	Chu Mo
23	Other land type	232964	1508502	Yang Nam
24	Other land type	234987	1508236	Yang Nam
25	Dry forest	226683	1500211	Kim Tan
26	Dry forest	226752	1499876	Xã Ia KĐăm
27	Other land type	229253	1491417	Xã Ia KĐăm
28	Dry forest	236189	1487723	Chu Mo
29	Dry forest	232446	1490789	Chu Mo
30	Dry forest	234719	1488000	Chu Mo
31	Dry forest	232555	1491385	Chu Mo
32	Dry forest	233872	1488237	Chu Mo
33	Dry forest	234085	1485138	Ia Tul
34	Dry forest	230402	1491038	Chu Mo
35	Dry forest	237150	1487729	Ia Tul

**Appendix 4. Information on the location of Green peafowl groups detected (Projection: Vn2000)**

<b>Group</b>	<b>Habitat</b>	<b>X</b>	<b>Y</b>	<b>Commune</b>
1	Dry forest	230078.64	1490814	Chu Mo
1	Dry forest	231323.8	1495891	Ia KDam
2	Dry forest	231246.74	1490633	Chu Mo
3	Dry forest	233788.67	1505084	Chu Mo
4	Dry forest	232389.69	1507722	Yang Nam
5	Dry forest	232766.49	1507029	Yang Nam
6	Dry forest	231646.63	1507879	Yang Nam
7	Other land type	231730.63	1508449	Yang Nam
8	Dry forest	233392.62	1508608	Yang Nam
9	Dry forest	233535.62	1508271	Yang Nam
10	Dry forest	234629.68	1506841	Chu Mo
11	Dry forest	234465.16	1507124	Chu Mo
12	Dry forest	234880.57	1506565	Chu Mo
13	Dry forest	235999.3	1506537	Chu Mo
14	Dry forest	233358.77	1506783	Chu Mo
15	Dry forest	234674.03	1507518	Chu Mo
16	Dry forest	234099.1	1507867	Yang Nam
17	Dry forest	234963.91	1507767	Chu Mo
18	Dry forest	235407.96	1507667	Chu Mo
19	Dry forest	235674.38	1507865	Chu Mo
20	Dry forest	236262.54	1508149	Yang Nam
21	Dry forest	235756.87	1508962	Yang Nam
22	Dry forest	234487.78	1509120	Yang Nam
23	Dry forest	232590.66	1494794	Ia KDam
24	Dry forest	232642.07	1494907	Ia KDam
25	Dry forest	232808.65	1495034	Chu Mo
26	Dry forest	232642.07	1495203	Ia KDam
27	Dry forest	231953.15	1495248	Ia KDam
28	Dry forest	231487.36	1495113	Ia KDam
29	Dry forest	231329	1495440	Ia KDam
30	Dry forest	230949.7	1495645	Ia KDam
31	Dry forest	231235.43	1495515	Ia KDam
32	Dry forest	231132.6	1495708	Ia KDam
33	Dry forest	231286.84	1495730	Ia KDam
34	Dry forest	231201.5	1495968	Ia KDam
35	Dry forest	231406.12	1495913	Ia KDam
36	Dry forest	229518.6	1495690	Ia KDam
37	Other land type	229117.25	1495120	Ia KDam

<b>Group</b>	<b>Habitat</b>	<b>X</b>	<b>Y</b>	<b>Commune</b>
38	Dry forest	229285.25	1496427	Ia KDam
39	Dry forest	228510.57	1496726	Ia KDam
40	Dry forest	227236.55	1498830	Ia KDam
41	Dry forest	227324.97	1499266	Ia KDam
42	Dry forest	227265.8	1499907	Ia KDam
43	Dry forest	228174.33	1499713	Ia KDam
44	Dry forest	228943.46	1498594	Ia KDam
45	Dry forest	233756.96	1493507	Chu Mo
46	Regeneration forest	233161.67	1493226	Chu Mo
47	Dry forest	235245.61	1493190	Chu Mo
48	Dry forest	235066.69	1493722	Chu Mo
49	Dry forest	234904.22	1494435	Chu Mo
50	Dry forest	234104.24	1492976	Chu Mo
51	Dry forest	233535.95	1503026	Chu Mo
52	Dry forest	233366.49	1504282	Chu Mo
53	Dry forest	233582.92	1504637	Chu Mo

**Appendix 5: Some photos relating to the project implementation**



Survey team



Team leader and Chu Mo protection forest leader



Presentation at school



Green peafowl habitat

## Bibliography

- Birdlife international and FIPI, (2001) Source book of proposed and existing protected areas in Vietnam. BirdLife International - Vietnam Programme, Hanoi, Vietnam.
- Brickle, N. W., Nguyen Cu, Ha Quy Quynh, Nguyen Thai Tu Cuong and Hoang Van San, (1998) The Status and Distribution of Green Peafowl *Pavo muticus* in Dak Lak Province, Vietnam. BirdLife International - Vietnam Programme, Hanoi, Vietnam.
- Brickle N. W., Duckworth, J. W., Tordoff A. W., Poole C. M., and Timmins R., (2008) The status and conservation of Galliformes in Cambodia, Laos and Vietnam *Biodiversity and Conservation* 17(6): 1393-1427.
- Indrawan, M., (1995) Behaviour and abundance of Green Peafowl in Baluran National Park, East Jawa. MSc thesis, Zool. Dept., University of Aberdeen, U.K.
- IUCN, (2011) IUCN Red List of Threatened Species. Available from <http://www.iucnredlist.org/>. Accessed October 5, 2011.
- Stewart-Cox, B. and Quinnell, R, (1990) Using calls, footprints and sightings to survey Green Peafowl in western Thailand. Pp. 129-137 in Hill, D. A., Garson, P. J. and Jenkins, D. (eds.) *Pheasants in Asia 1989*. World Pheasant Association, Reading, U.K.
- Tordoff, A. W. ed., (2002) *Directory of important bird areas in Vietnam: key sites for conservation*. Hanoi: BirdLife International in Indochina and the Institute of Ecology and Biological Resources.
- Vu Tien Thinh and Rawson, B. M., (2011). Package for calculating gibbon population density from auditory surveys. Conservation International / Fauna & Flora International, Hanoi, Vietnam.
- Zainal-Zahari Z., Mohd T. A., Mohd S. and Mohd N., (2001). Introduction to the Green Peafowl (*Pavo muticus muticus*) in the vicinity of the Zoo Melaka, Malaysia – a preliminary observation. *The journal of Wildlife and Park*.