RANGER BASED DATA COLLECTION COURSE

13th to 18th December 2010
Pang Sida National Park Headquarters

PANG SIDA NATIONAL PARK
THAILAND

Course #10-2010

FREELAND Foundation 591 UBC II Bldg., 10th Fl., Room 1001
Sukhumvit Soi 33, North Klongton, Wattana
Bangkok 10110, Thailand
Tel. +66 2 204 2719-21 Email. info@freeland.org

THIS PAGE INTENTIONALLY LEFT BLANK

#10-2010 RANGER BASED DATA COLLECTION TRAINING COURSE

Support for this course came from the following organizations;

THIS PAGE INTENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY

This report describes the first in a set of activities for 2010-11 implemented by FREELAND in Pang Sida National Park which is one of the parks that comprise the Dong Phayayen-Khao Yai World Heritage Site. These support activities are designed to improve the management capacity at this protected area to preserve and safeguard its biodiversity.

A Ranger Based Data Collection course was conducted as a way to improve the reporting ability of patrol rangers. This will develop a better understanding of the threats from violations the park faces as well as distribution of key wildlife populations.

During this particular course 25 rangers were trained how to collect various forms of data in a standardized way and to regularly relay this data back to the park management. Also trained were 4 senior rangers in methods to teach the subjects in the course. Finally, all participants were given equipment such as wildlife guides, measuring calipers and compasses to keep and use during patrols. At the course closing ceremony, digital cameras, GPS and a computer were all donated to the park management help with data collection and storage.

Results will be measured over the upcoming months, as rangers collect data and send back completed forms to their office when FREELAND staff will mentor data-management staff in data storage and subsequent analysis.

INTRODUCTION

In many protected areas, managers miss valuable opportunities to gather field data that could assist them in understanding what is happening inside their parks. Rangers patrol regularly and can easily collect information on wildlife and park violations in an opportunistic way. This relatively low cost manner of gathering data is lost because of a multitude of reasons; staff perceive a lack of financial support inhibits them from having access to technical equipment, which in turn (they think) prevents them performing efficiently. Moreover, staff are worried that proof of violations will show them in a negative light and occasionally it is simply a lack of capacity, or understanding on how easy, cheap and useful this essential practice in park management really is.

Agencies charged with managing protected areas often do not have any standard operating procedures in place, or simple processes for reporting relevant data. Criminal cases usually involve lengthy legal reports required to accompany suspects to the police or court. Staff often understand that every occurrence requires a similarly lengthy report. In reality it takes no more than a minute or so for any park staff member to jot down enough data from an observed incident to start building a data-set that will help a park manager get a better view of what the current situation looks like during their watch. This accumulated data can be compared over specific periods of time and hypothesis can be formulated to indicate what the latest trend in poaching may be. The result maybe the current location of recent ‘poaching hotspots’ or an indication as to what the latest major threat is, or simply specify targeted species which may change according to availability, season, or demand,.

Ranger Based Data Collection is easy to implement and only requires simple training and firm direction from the park manager to ensure Ranger Team Leaders hand back completed data forms on their return from the field. As a patrol finishes, a post-patrol debrief should always be conducted, during which forms can be collected and returned with equipment issued for the patrol. Ideally, rangers should have standard forms, maps, GPS and digital cameras to clearly record all aspects of the patrol or wildlife data they have collected. But in the absence of some of this equipment, merely a simple standard form and a pencil will suffice. Rangers regularly see things on patrol they take for granted, such as old poacher camps, wildlife sign, and environmental changes. However, unless these are recorded somewhere – it is as if they never happened and consequently off the record.

Access to good information can form basic intelligence that can be utilized for strategic management planning. Protection and Enforcement managers can integrate this information into patrol team meetings and discuss the relevance of occurrences and trends with rangers. If checked and proven, information may show a clear and present problem and the first step to solving it has already been accomplished. Denial will lead to a worsening situation, until valuable natural resources are damaged beyond remedial response. Wildlife sign can be considered alongside violation incidents to help Protection Managers focus limited resources where they are truly required.

This training course was the fourth in a series planned for 2010 in the Eastern Forest Complex. The main goal is to initiate data collection as a routine activity. The data can be analyzed alongside other intelligence leading to a better understanding of what is really occurring on the ground. This will then lead to strategic responses to protect the park's wildlife populations. The ranger based data collection; its subsequent analysis and use in park management will have beneficial consequences to all of Pang Sida's biodiversity. As technical capacity and experience increases at this focal site, we hope to expand the lessons learned to the other four protected areas in the Dong Phayayen-Khao Yai Complex. This will assist the Department of National Parks manage the complex in a standard and cohesive manner.

Presently we are prescribing use of a software from Ecological Software Solutions called MIST (Management Information System) as the database to store and analyze field data. RBDC is specifically to support data collection, storage and processing of such data.

ACKNOWLEDGEMENTS

A number of individuals and organizations were instrumental to the success of this training course. We thank:

Donors and Supporters

The Thai Department of National Parks, Wildlife and Plant Conservation

Pang Sida National Park Superintendent. Mr. Chatri Padungpong for facilitating activities

Rufford Small Grants for supporting this training activity

Panthera Foundation for supporting field equipment

21st Century Tiger for supporting equipment and field costs

Care for the Wild International for supporting equipment

Andy Rouse Wildlife Photographer for supporting equipment

David Shepherd Wildlife Foundation for supporting equipment

US Fish and Wildlife Service for supporting some staff costs

Thap Lan National Park Superintendent. Mr. Sittichai Banpot for allowing two rangers to participate throughout the course as instructors

Khao Yai National Park Superintendent. Mr. Manoch Ganpanakngan for allowing one ranger to participate throughout the course as an instructor

Instructors

From FREELAND Foundation; Ms. Thattaya Bidayabha, Mr. Tim Redford, Mr. Sayan Raksachart. From Khao Yai National Park; Ranger Mr. Boonluan Sankod, From Thap Lan National Park Assistant Instructors Mr. Wanchai Ladsai and Mr. Chalao Kotud

Trainee Instructors/ coordinators

From Pang Sida National Park, Ranger Mr. Sommai Sopee

Support Staff

FREELAND staff that helped in Bangkok; Administration and accounting Mrs. Evangeline Mercado, Ms. Chatnapa Juangtrakul, Ms. Usawadee Makhee, Ms. Chintana Puttham, Ms. Panida Chalaochai, Ms. Mala Koopthavonrerk, Mrs. Sunun Kaewmaken, and the entire staff in FREELAND's Bangkok office

Others

Mr. Bruce Kekule for sharing his knowledge of protected areas in Thailand and his insights into the threats they face during a presentation showcasing his wildlife photography from parks in the Kingdom

Mr. Paul Thompson for supporting our conservation work in the Eastern Forest Complex

Superintendent Sawang Tippayanukool from Klong Krua Wai Chalerm Prakiet Wildlife Sanctuary for allowing 2 rangers to attend

Superintendent Boonchird Chareon-sook of Ta Phraya National Park for allowing 2 rangers to attend

OVERALL COURSE OBJECTIVES

This course is designed to:

- Increase professional skills of patrol rangers
- Standardize the way rangers collect data while in the field in Pang Sida
- Instill an understanding among management and staff how successive data analysis provides an objective understanding into the current situation concerning violations and wildlife population trends in a park or complex;
- Ensure participants know how to correctly utilize donated technical equipment
- Provide Park Superintendents and Managers with the information they require for daily and long-term strategic management decision-making processes.
- Enhance the ability of Pang Sida staff to conserve the biodiversity of the World Heritage Site

RANGER BASED DATA COLLECTION TRAINING COURSE OVERVIEW

The RBDC course is designed for rangers who conduct forest patrols and are tasked with collecting data and reporting as part of their regular duties. The course trains them how to gather essential data in a standardized manner, enabling storage in a database and retrieval for subsequent comparative analysis.

The course is divided into two distinct sections; the first being classroom-based where theoretical and hands-on skills are taught, mostly by rangers already skilled in them. Immediately followed by a 2 to 3 day 'real' patrol in the forest during which all the newly trained skills are combined and utilized during this practical on-the-job training session.

Throughout the course pre and post tests given for the main topics, to gauge participants understanding and a final 50 question quiz evaluate overall success of the course delivery in conjunction with a student's feedback evaluation. The number of course participants is restricted to just 25 participants per time, so that instructors have the ability to observe and coach each student. The option for remedial instruction is open if students are not able to achieve obvious immediate mastery of skills.

During the field section of the course it very quickly becomes evident if participants do not fully comprehend topics previously taught and a further option still remains to teach and assess rangers during the patrol in an environment that requires mastery of skills.

Each of the classes in Part 1 are a maximum of 50 minutes in length and are aimed at developing an understanding of why wildlife and healthy ecosystems are important, use of technical equipment and correct ways to gather data in a standardized manner. The value of these skills helps to develop rangers reporting ability and graduates will ensure pertinent field data is collected and available for analysis.

COURSE TOPICS INSTRUCTED DURING THE COURSE

PART 1 – Class and theoretical

Section 1: Introduction

- What are protected areas?
- The Value of Biodiversity
- Role and Responsibility of Rangers

Section 2: Navigation

- Maps - 4 classes
- Compasses - 2 classes
- GPS – 3 classes
- Combined navigation exercise

Section 3: Wildlife Survey and Data Collection Methods

- Wildlife Monitoring – Introduction
- Wildlife Identification
- Wildlife track and sign
- Use of digital cameras
- Use of digital cameratraps
- Making plaster casts of wildlife tracks

Section 4: Recording Data and Data Management

- Use of standard data collection forms
- Downloading data from GPS
- Downloading data from cameras
- Data management Db, GPS, photographs
- Introduction to desktop computer applications (ArcView, MIST)

PART 2 – Field patrol and survey

- Combined skills: Navigation (map, compass, GPS), use of technical equipment (Digital cameras and cameratraps), use of data collection forms and reporting

EXPLANATION OF COURSE TOPICS

Section 1: Introduction

What are protected areas?, Instructor: Thattaya Bidayabha

This topic explains why governments around the world designated some wildernesses as protected areas (PA's) and the different IUCN classifications that these locations areas are categorized under. The impact of human population growth is discussed and why this is a major threat to the future of parks and how PA's are the Earth's ''Banks of Biodiversity'' essential to sustainable food security and human health.

The roles that protected areas in Southeast Asia perform are examined, as is their differing legal status and distribution. The presentation focuses mostly on the Thai National PA system, its history and conception, management and types of park management classification. A discussion of the Dong-Phayayen-Khao Yai World Heritage Site is initiated as to how it acts as a watershed for a large portion of central and Northeastern Thailand. Its role as a Transboundary complex with a contiguous boundary to a PA in Cambodia is also discussed.

Finally, a discussion on the threats to PAs is initiated. Trainees are encouraged to talk about the problems they experience during their work and suggest possible resolutions to them. Inter-agency cooperation is highlighted as one potential way to maximize resources to counter crimes in and around PAs. Some other types of interventions are tabled, such as heightening awareness among decision makers, local politicians, village leaders, community members and students.

The class concludes that without an understanding of the threats, at all levels - then realistic measures to counter these problems cannot be found. Therefore, data collection is paramount to helping create this understanding and to ways to solve the degradation that parks are experiencing.

Value of Biodiversity, Instructor: Thattaya Bidayabha

Many people, especially in developing and newly developed countries still do not connect the fact that healthy ecosystems are essential to healthy economies and societies. Luckily some countries have realized this, yet governments still do not manage to provide agencies charged with protecting them the resources they truly require. This class explores what biodiversity is and means and why we rely on it everyday for our health, as well as essential goods and services.

Some products obtained from the wild, either presently or historically, are mentioned. How we still require healthy eco-system services to provide food security and water essential for life. Also discussed is how many species are becoming increasingly rare or extinct, denying us of their genes required for improving crops, strengthening breeds of domesticated animals or medicines.

Southeast Asia, specifically the Indo-Burman Region, is one of the most densely populated regions on Earth, but still has immense natural resources and is considered a biodiversity hotspot because of the wide variety of species already described and other species which are still being discovered. The pressures on the region's ecosystems are immense and unless protected areas start to monitor and understand what is happening within the areas they are caring for - changes may go unnoticed until it is too late when retroactive actions will be impossible.

Role and Responsibility of Rangers, Instructor: All

Protected areas Staff often have a multitude of tasks assigned to them, sometimes these are incompatible roles, which do not prioritize essential work. For example, Enforcement rangers are sometimes expected to work as laborers cutting grass, mechanics servicing park vehicles or with the local community in outreach activities. This last example is an almost impossible task, as building trust among local communities takes time and cannot be successfully achieved by sending in the same rangers which villagers have only previously met during law enforcement actions.

To resolve this problem within Southeast Asia the ASEAN Centre for Biodiversity (Previously known as ARCBC and now ACB) has classified each role of professional protected area staff and their responsibilities[1]. All of these PA job roles and responsibilities (and the relative competencies) are described along with the skills outlined for staff to comprehensively perform them. These criteria are already being accepted and implemented by AMC governments, sometimes slightly adapted to the local situation.

Use of maps

Occasionally, some well-matched roles can be combined, an example 'Wildlife Ranger' is introduced here. This is designed as a complementary position to Enforcement Rangers. It is possible for patrol teams to have one member assigned to collect wildlife and violation data during patrols. These duties would be undertaken by ***'Ranger 1'*** in a 7-man anti-poaching patrol team[2] and as the team finds relevant data this ranger would spend a short time completing sections in the standard data collection form.

This role of wildlife ranger includes specific skills described in the ACB guide, including Enforcement Ranger Level 2 general skills ENF2.4 (Report on patrol activities and observations using standard formats and procedures) and Natural Resources Technician Level NAT 1 skills (all) as well as some level 2 skills, including NAT2.3 (Use of standard forms and reporting systems for recording survey information). So, although the 2 PA jobs of enforcement ranger and natural resources technician seem very different - they do encompass compatible responsibilities which combined fulfill the responsibilities of a Wildlife Ranger.

[1] Competence Standards for Protected Area Jobs in South East Asia Compiled by Michael R. Appleton, Gregorio I. Texon & Monina T. Uriarte (ASEAN Regional Centre for Biodiversity Conservation 2003) ISBN971-8986-49-9

[2] Enforcement Ranger Manual, Mark Bowman (FREELAND Foundation 2010) ISBN 978-974-401-959-2

Section 2: Navigation

Good navigation skills are an essential requirement for efficient patrolling and this is even more relevant when data is to be collected, so it can be clearly proven from an exact location. Rangers on patrol can easily collect data regarding illegal activities and key wildlife species, which can subsequently be processed in a timely way into information for day-to-day management decision-making. Data can be used to calculate indices for monitoring. These indices provide measures for relative density comparisons in monitoring programs. Park protection patrols can then be deployed based on intelligence information, to maximize use of resources and outcomes.

For data to be utilized in monitoring programs, the following criteria should be met: Collection must follow standard principles (using the standard form assists this). Data collection across management sectors should be dependable and distance patrolled must be precisely recorded (consistently using and downloading a GPS will supply this).

During this section all participants were given a map, compass and GPS to practice with. The subsections of the topic were clearly divided and yet still combined into one skill in a logical manner. Participants were given the opportunity to hone their abilities until they were finally confident enough to merge map, compass and GPS into one combined regime. Instructors fully tested the participants in both class and field environments.

Maps, Instructor(s): Boonreun Sankoot

We found that in the past many rangers in Pang Sida generally did not have access to maps or other navigation aids when on patrol. The field section confirmed that generally they were not confident leaving well-trodden trails. Consequently, this influences where they patrol, how far they travel and the type and amount of data they able to find and collect.

During this section each participant was given a full-scale 1/50,000 UTM map using WGS84 Datum. All complementary equipment was set to this datum, as the most recent maps available also use this projection. The participants were given a small full color map of the area surrounding the training location to practice with. This enabled them to understand the information the map contains as well as details included in the map legend. Some of the participants in this course are graduates from an Enforcement Ranger Training Course, during which they received extensive navigation training, even so - because they have not had access to the relevant equipment since their return some did not fully retain their navigation skills.

All participants expressed a desire to have regular access to maps, compasses and GPS for all patrolling duties. Therefore, compasses were donated to each, maps will be copied for teams and more GPS and download cables will be donated to the different park management zones.


Practicing use of compasses for bearings

Compasses, Instructor: Wanchai Ladsai (with all assisting)

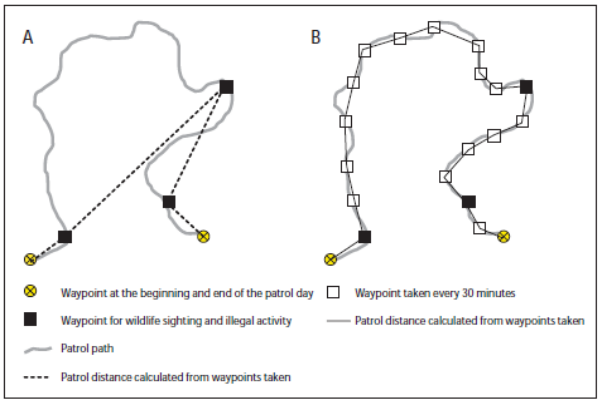
When navigation equipment is available there appears to be too much reliance on GPS among many PA staff, with little consideration of how to cope if they lost use of this equipment. Therefore, we went back to basics with the compasses and showed them how this simple piece of equipment can help them in a

multitude of ways. Not just for patrolling, but for plotting bearings to ''home-in'' on locations where gunshots or chainsaws were heard, or to navigate around obstacles. Simple Silva™ brand compasses that use degrees were explained to participants and their use in conjunction with the UTM maps. Later participants were tested on an orientation course laid-out by the instructors. Prior to this course only 6 of the 25 rangers had ever received any compass training. All participants were given a compass to keep as their own.

Global Positioning Systems (GPS), Instructor: Thattaya Bidayabha,

In both the standard report forms (violation and wildlife) the exact location that the data was found must be recorded. The data can then be overlaid on geo-referenced GIS maps to give a graphic display to the situation. So, GPS that can easily be downloaded are essential. Different models have different strengths and weaknesses. For example the Garmin™ Etrex H is cheap but difficult to download and also does not easily download the date of a location., whereas the Garmin™ GPS 60csx downloads quickly and easily through a simple USB cable, but it tends to use more battery power to run the color screen. The participants were trained in the use of both models, but all expressed a preference to the more expensive 60csx.

Again, as some of the participants had received prior navigation and GPS training (6/25), some were confident in using the GPS. Apart from simple marking a location and extracting the 6-figure grid reference the rangers were taught to use the manual UTM entry method for use during 'Go To' and combining map, compass and GPS for accurate navigation.



Comparison o actual and calculated patrol distances. A: Minimal waypoints from only observations and B: based on RBDC principles. *Diagram courtesy of BPAMP June 2006*

During this section frequency of waypoint recording was discussed and the use of the park's own standard patrol datasheet for storing waypoints. By recording waypoints regularly a level of effort can be gained and used to gauge frequency of notable events. Also discussed was the use of icons for marking sites of interest, as the Garmin GPS now have a large stock of file waypoint icons, but it is difficult to ensure all data recorders use the same icons, therefore participants were instructed to confine their use of waypoint icons to just a standard flag or point.

Navigation exercise

As a final navigation training exercise the rangers were divided into small groups and given a briefing on how to conduct the exercise. This activity involves the groups being given a starting to point and then using new navigation skills to complete a course containing 10 waypoints that need recording. There was a prize for the group completing first, to add a little competitiveness. Instructors spent the morning placing a series of notices at each location with tasks assigned to them. For example, in one point they were asked to find their 6-figure UTM and from there

Navigation exercise (note instructions on tree)

navigate to the next location using a compass bearing and from there using pacing to measure the distance to the next site. Other skills directed them to record topographical features, which were later checked back at the class. This exercise covered a distance of about 5 kilometers.

Section 3: Wildlife Survey and Data Collection Methods

Wildlife Monitoring – Methods, Instructor: Thattaya Bidayabha

A presentation of the most usually used wildlife monitoring methods was given. This looked at a range of techniques than can utilized or combined to gather wildlife data. This section was designed as only an introduction to these methods, rather than complicated descriptions of how rangers can conduct them and aimed specifically at building an understanding of various techniques' available rather than training them on specific or more complex methods. Simple ways that can easily be used on patrols were highlighted, included direct and indirect observations of wildlife and their sign and where to expect to find certain species by considering their ecological needs.

Wildlife Identification, Instructor: Thattaya Bidayabha

A short class on identification of the carnivores expected to inhabit Pang Sida was conducted. A pre-test demonstrated that most rangers knew only the very common species and did not know how to identify the small carnivores such as felids and viverrids. There was a common expectation that certain species exist in the park, without any proof that these occur. One example of which is the Spotted Leopard (no records from the Eastern Forest Complex). Participants were given pre/post tests with a class explaining how to identify most large mammals in-between. A Thai language book ''The Large Mammals of Thailand'' by John Parr was given to each participant for them to keep and study at their sub-stations after the course.

Wildlife track and sign, Instructor: Thattaya Bidayabha and Wanchai Ladsai

An easy-to-use guide to the tracks of the main mammal species that occur in Thailand and vernier calipers were distributed to each participant. Ways to measure tracks were explained and a description on which measurements are most important and the different sizes for similar species and different sexes of the same species (in the case of large carnivores). The effects of different substrates, age and weather on track and sign were also discussed.

Track and sign class

In the second part of this class the rangers were given a series of tracks to record using the standard data forms. Rangers were expected to use all resources to fully complete the form, such as GPS for the location, vernier calipers to measure size and the track guides to identify exact species (if possible). One further skill demonstrated, was the use of plaster of paris for making plaster casts of tracks. The students were able to participate in this practical session by making their own cast of a tiger track found on the edge of the forest at the training location (placed there by the instructors). This practical session was enjoyed by all and provides a cheap practical method to record important sign when they find it. Plaster and data forms were distributed to representatives from each park management zone to take back to their work-station.

The final part of this section on data recording was using cameras. This was divided into two parts, the first using Digital still cameras and the second using digital cameratraps.

Use of digital cameras, Instructor: Sayan Raksachart

An essential piece of equipment for all rangers on patrol is a still camera. The development of cheap high resolution digital cameras means that the ability to record images to include in patrol reports is within the reach of any institution or park. However, most people have never received training in how to use a camera and consider it is just a matter of point and shoot as the term manufacturers use to sell them implies. Consequently, the quality of images is often low and the pictures are of little use.

The rangers were each given a simple digital camera to practice with and following a brief introduction on four different types of photographs rangers may use, these include; macro (for recording close-ups of wildlife sign or evidence), landscape (for recording larger sign, violations or photographs which demonstrate their work), portraits (for taking evidence photographs of violators) and video (for situations where they can record violations or confessions from suspects when they occur). After this explanation, which included a briefing on all the cameras features they were given a short period to practice taking photographs.

The participants returned to the classroom and results were reviewed and discussed. Many participants rushed their photography and missed good opportunities by not composing pictures before taking the photograph. Others' zoomed on portrait shots rather than moving closer to their subject. This review gave a fun forum that helped explain to participant's ways to practically improve their photography and helped them understand the appropriate situations for each type of camera setting.

Use of cameratraps, Instructor: Thattaya Bidayabha

Most participants had heard of cameratraps and seen a few photos' from various sources, but few had ever used one and none had ever had the opportunity to practice setting them up. This section explored ways to use cameratraps, how and where to place them for optimum results and how to download files from them. In the field practical section one ranger from each group was taught and then with an instructor observing was expected to train the next participant in all aspects of setting-up and placing a cameratrap at an actual situation in the forest. The camera's will be left for one month and then reviewed with participants, so they may see what wildlife they recorded.

Use of data sheets

Section 4: Recording Data and Data Management

Use of standard data collection forms, Instructor: Thattaya Bidayabha

A simple 2-page Field Data Form was developed by FREELAND in conjunction with Thap Lan officials and suggested to Pang Sida park management for use by rangers on patrol. The form is duel-sided, the first for recording violations and the second for wildlife data. It is conveniently sized to fit into a side pocket of a ranger's uniform and gathers the basic data required to record a specific incident or wildlife sign. More detailed reports can be written for submission to a park recorder to accompany cases handed to the police or for further investigation. We have found that anything more than one page does not encourage rangers to complete the form. A shorter concise form is far better received and consequently utilized.

However, even this shortened form was not used to its full potential during the field section of the course. The rangers simply jotted GPS waypoint codes into their notebooks and transcribed the data onto the form as time permitted. One reason they explained was that often data given to the office is never returned or is lost and they wish to keep their personal copies of important records. The next stage for us during this introduction of the datasheets is to request the park superintendent to order their use, which we would rather not do. However, it maybe the only way to ensure the forms obtain wider use.

The first side of the Standard Data Form (Patrol data);

Patrol Data / ข้อมูลลาดตระเวน Date วันที่: Start Date / เวลาเริ่มต้น Finish Date / เวลาสิ้นสุด					Team ชุดลาดตระเวนที่ Names of team members ชื่อจนท.ลาดตระเวน		
Route เส้นทางสำรวจ							
Way-point จุดที่	UTM Coordinate ตำแหน่ง UTM East ตะวันออก	North เหนือ	Area (name) พื้นที่	Incident เหตุการณ์ Code below รหัส	Confiscated item ของกลาง	Poacher ผู้ต้องหา	Note หมายเหตุ

Incident codes: 1=Logging, 2= Wildlife Poaching, 3= Aloewood, 4= Charcoal, 5= Encroachment, 6= Other illegal activity, 7=Poacher camp, 8= Human encounter, 9 = Violation, 10 = Arrest, 11 = Weapon, 12 = Confiscation, 13 = Dangerous situation, 14 = Illness/injury, 15 = Fire, 16 = wildlife sign (see side 2 sheet), 17 =Patrol base/rest, 18 = topographic/climatic incident, 19 = Equipment lost/broken, 20 = other (describe)

The second side of the form (Wildlife data);

Wildlife Data / ข้อมูลสัตว์ป่า					Team ชุดสำรวจที่		
Date วันที่:					Name of Surveyors ชื่อผู้สำรวจ		
Start Date / เวลาเริ่มต้น							
Finish Date / เวลาสิ้นสุด							
Route เส้นทางสำรวจ							
Way-point จุดที่	UTM Coordinate ตำแหน่ง UTM East ตะวันออก	North เหนือ	Habitat type ชนิดป่า	Species ชนิดสัตว์	Type of Sign ชนิดของร่องรอย	Track size ขนาดรอย	Note หมายเหตุ

These forms contain the basic fields for most data to be recorded, enabling it to be later entered into a database such as MIST. These forms are not permanent documents and can be improved and adapted as the database software situation develops. The most important consideration was to keep them as user-friendly as possible to encourage rangers to use them. We have interviewed countless patrol rangers, in every situation they continually stated that complex multipage forms were not practical in the field and they had little interest in participating in time consuming data collection exercises if longer forms were used during patrols.

Due to time commitments the following post-field topics below were only briefly trained and so more intensive data management mentoring will be conducted one-on-one for specific staff responsible in the park's offices.

Downloading data from GPS

GPS downloading

Two Garmin 60csx were downloaded 'live' in the class using Garmin's WorldMap™ software. This proved easy and to demonstrate the versatility of the software waypoints and tracks were opened in Google Earth™, which is directly compatible with WorldMap™. Participants were able to see how easy this complementary patrol data is downloaded and can be used in conjunction with the datasheets and how a graphic display of patrols can be obtained without using sophisticated or expensive software. This model of GPS and associated Garmin software now seems to be standard used by the DNP nationwide.

Downloading data from cameras

Some of the cameras used in the field section were downloaded and the participants were able to see what type of information had been recorded using the still cameras. Again the cameras are essential to record data which can supplement datasheets and reports. Most of the rangers do not own personal digital cameras and so enjoyed having access to them during the survey field training section.

Data management Db, GPS

Storage of all information in a logical and retrievable fashion is important. This aspect of the course is for office-based staff, but we consider it important that the rangers, of which many have computer skills, start to understand how data should be stored according to patrol and date. The data-set includes information from; standard datasheet information, photograph downloads and GPS downloads. Each needs to be recorded according to team, location and date and kept as separate raw data as well as being amalgamated into the overall database.

Introduction to desktop computer applications (ArcView, MIST)

To help the participants understand why it is important to collect data and how this can be utilized in a form easy for staff to understand a brief introduction to Geographic Information Systems (GIS) was given. The most common park-based program used in Thailand presently is ArcView, but there is access to ArcInfo and ArcMap also. Presently there is a proposal to standardize the database management and one cost-effective solution to this is the open-source program MIST.

FIELD DATA COLLECTION AND TRAINING SECTION

To ensure participants fully understand topics taught and how to use their skills a 2-day patrol was conducted over 16-17 December. Participants were divided into three groups, each with 2 or 3 instructors. Routes were designed in conjunction with participants. All 3 routes are in the Central section of Pang Sida immediately south of the contiguous Thap Lan National Park. During the patrol each team set cameratraps which will be left for one month. Results will be included at the end of this section.

Team 1 route (North along road from Km 25 towards Lam Praeng – Thap Lan)

Ser	Name	ชื่อ	ตำแหน่ง/Location
1	Thattaya Bidayabha	ทัตตยา พิทยาภา	มูลนิธิฟรีแลนด์
2	Sommai Sopee	สมหมาย โสภี	พนักงานพิทักษ์ป่า ที่อยู่ อุทยานแห่งชาติปางสีดา
3	Wanchai Ladsai	วันชัย ลาดซ้าย	พนักงานราชการ ที่อยู่ หน่วยพิทักษ์อุทยานแห่งชาติทับลาน
4	Wiratchai Sittiwongsa	วีระชัย สิทธิวงษา	สายตรวจ อุทยานแห่งชาติตาพระยา
5	Banlou Banklang	บรรลุ ปั้นกลาง	พนักงานราชการ อุทยานแห่งชาติเขาใหญ่
6	Bancha Bualakorn	บัญชา บัวละคร	พนักงานราชการ เขตรักษาพันธุ์สัตว์ป่าคลองเครือหวาย (ส่วนกลาง)
7	Pongwihan Tangsee	พรหมวิหาร ต่างสี	พนักงานราชการ อุทยานแห่งชาติปางสีดา (ปด. 2 คลองหมากน้อย)
8	Supachai Boonsuk	ศุภชัย บุญสุข	พนักงานพิทักษ์ป่า อุทยานแห่งชาติปางสีดา (ส่วนกลาง)
9	Paiboon Noisupan	ไพบูลย์ น้อยสุพรรณ	พนักงานพิทักษ์ป่า (ส่วนกลาง) อุทยานแห่งชาติปางสีดา
10	Pongsak Pooncharoen	พงษ์ศักดิ์ พลูเจริญ	สายตรวจ อุทยานแห่งชาติปางสีดา (ปด. 2 คลองหมากน้อย)
11	Piched Jitjamnong	พิเชษฐ์ จิตจำนง	สายตรวจ อุทยานแห่งชาติปางสีดา (ส่วนกลาง)
12	Samlip Boonkleung	สัมฤทธิ์ บุญกลึง	สายตรวจ อุทยานแห่งชาติปางสีดา (ปด. 9 แผ่นดินเย็น)

Team 1 – Km 25 North towards Lam Praeng

This team started their patrol from the view point at Km25 and walked approximately 8km northwards towards Lam Praeng area of Thap Lan, where the two national parks converge. Their route follows an abandoned road and mostly runs perpendicular to an east-west downwards slope. At many locations the road is eroded and washed out by streams and flood run-off. This prevents any motor vehicles using most of this section and effectively closes the North-south national route #3462 (which is still marked on maps). This provides many suitable sites to set cameratraps, as it is easy to access and is used regularly by wildlife, especially elephants.

The forest type is mostly dry evergreen with a few bamboo patches. There are water sources along the entire route meaning wildlife frequents the area the entire year. Average elevation is 568m above sea level.

The team found sign of elephants, gaur, sambar deer, and bear along the road, as well as tiger tracks and feces. This gave them a great opportunity to practice recording sign data, photographing the tracks, setting plaster-of-paris casts and completing data sheets. Some interesting sign was found, as illustrated here. This is tiger feces containing binturong remains.

Tiger feces with binturong fur and claws

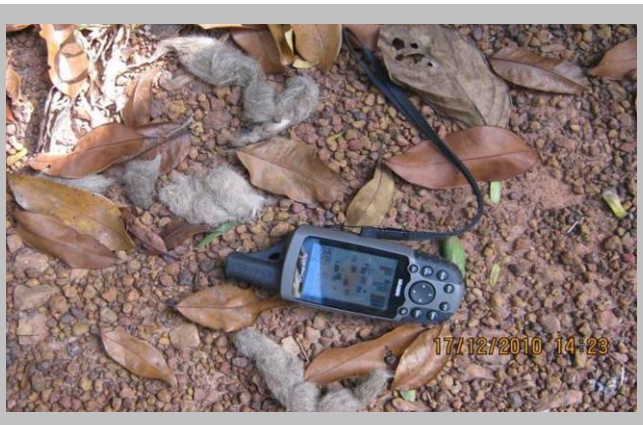
Team 2 route (9 km route to South of park- Lan Hin Dat – Bu Da Bot)

Ser	Name	ชื่อ	ตำแหน่ง/Location
1	Sayan Raksachart	สายัณย์ รักษาชาติ	มูลนิธิฟรีแลนด์
2	Boonreun Sankoot	บุญเลื่อน แสนโคตร	พนักงานราชการ ตำแหน่งพิทักษ์ป่า อช.เขาใหญ่
3	Saneh Yodpangtiem	เสน่ห์ ยอดพังเทียม	พนักงานพิทักษ์ป่าอุทยานแห่งชาติปางสีดา (ปด. 5 ห้วยน้ำเย็น)
4	Wichit Jamkasem	วิชิต จามเกษม	พนักงานราชการ อุทยานแห่งชาติปางสีดา (ปด. 6 ช่องกล่ำบน)
5	Prawej Chareonkiet	ประเวท เจริญเกียรติ	พนักงานราชการอุทยานแห่งชาติปางสีดา (ปด. 7 คลองเกลือ)
6	Arthit Wongthong	อาทิตย์ วงษ์ทอง	พนักงานราชการ อุทยานแห่งชาติปางสีดา (ปด.5 ห้วยน้ำเย็น)
7	Wisang Tongseekam	วิศักดิ์ ทองสีกล่ำ	สายตรวจ อุทยานแห่งชาติปางสีดา (ปด.1 แก่งยายมาก)
8	Wisit Chaihong	วิศิษฏ์ ชัยหงส์	สายตรวจ อุทยานแห่งชาติปางสีดา (ปด. 8 พระปลง)
9	Arthit Wongthong	อาทิตย์ วงษ์ทอง	พนักงานราชการ อุทยานแห่งชาติปางสีดา (ปด.5 ห้วยน้ำเย็น)
10	Apichart Paiobplee	อภิชาติ ไพอุปลี	สายตรวจ อุทยานแห่งชาติปางสีดา (ปด.5 ห้วยน้ำเย็น)
11	Sang-nga Rojdong	สง่า รอดดง	สายตรวจ อุทยานแห่งชาติปางสีดา (ปด.3 โคกสัมพันธ์)

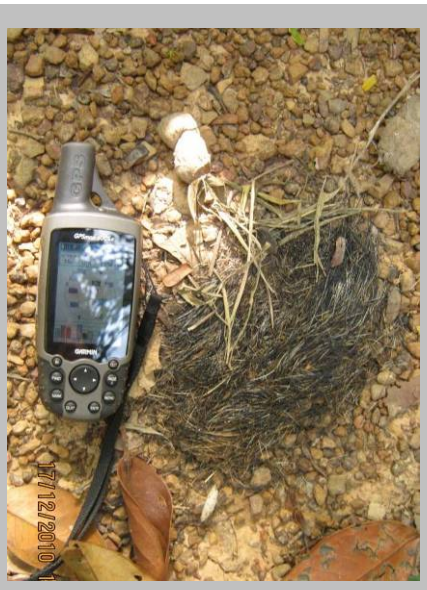
Team 2 – Lan Hin Dat – Bu Da Bo

The second training set was 9 km route from Lan Hin Dat, in a westwards arch through grasslands known for gaur sightings to Bu Da Bot.

The survey started at Km9 mark, along a small trail into dry evergreen forest. To continue to seek areas: (9 km - Lan Hin Dat), mostly along the a regular trail and then along the Huai Hin Dat stream. During the survey one notable absence was sign of wild elephant, despite the habitat being seemingly suitable for them. The forest type throughout was mainly low canopied dry evergreen forest. Wildlife and other sign encountered included wild boar, sambar deer, gaur and old poachers camps. In the early part of the day 3 cameras were set. On day 2 after breakfast the team continued along the wide stream through dry evergreen forest. is the same. Further sign of wild boar, sambar deer, gaur were observed as well as some sign of some small carnivores. A further 2 cameras were set. Later the forest opened out into a large grassland, with a track leading through it. Wildlife sign included gaur and sambar deer. A further 3 cameras were set. As the team continued through the grasslands Bu Da Dee – Bu Da Bot – Tung Krating (บุตาดี - บุตาปอด – ทุ่งกระทิง) sign of gaur,



Team 2 – Carnivore feces at Bu Da Bo



Team 2 – Tiger feces
at Bu Da Bo

sambar and tiger (feces) were found.

During the second trip to collect the cameras the team found the carcass of a dead Asiatic black bear, which was not there the month before. The carcass was mostly eaten and decayed, but a superficial examination proved that the death was probably not from poaching, as the paws and skull complete with canines were still present. Puncture wounds, possibly from a large predator were found in the skin surrounding the neck, leading to an assumption that this bear may have been killed by a tiger. A camera was placed at this site to record which species come to investigate it.

This route was easy to access and provided an ideal 2 day and 1 night walk for this training and would be a good trail for tourists to find wildlife.

Team 3 route (Proposed along Huai Nam Yen, changed to road from Km 13 to Km 25)

Ser	Name	ชื่อ	ตำแหน่ง/Location
1	Tim Redford	ทิม เรดฟอร์ด	มูลนิธิฟรีแลนด์
2	Chalao Kotud	เฉลา โคทัต	พนักงานราชการ อุทยานแห่งชาติทับลาน
3	Banpa Jatrulang	บรรพา จตุรัง	สายตรวจ อุทยานแห่งชาติปางสีดา (ส่วนกลาง)
4	Khanchai Kumsoong	ขรรค์ชัย คุ้มสูง	พนักงานราชการ อุทยานแห่งชาติตาพระยา (ส่วนกลาง)
5	Pongsak But-in	พงษ์ศักดิ์ บุตรอิ่ม	สายตรวจ อุทยานแห่งชาติปางสีดา (ปด. 10 วังครก)
6	Nee Suerbchart	นี สืบชาติ	สายตรวจ อุทยานแห่งชาติปางสีดา (ส่วนกลาง)
7	Sompong Labwiset	สมปอง ลาภวิเศษ	สายตรวจ เขตรักษาพันธุ์สัตว์ป่าคลองเครือหวาย (สำนักงานเขตฯ)
8	Seeplair Jaiklar	สีแพร ใจกล้า	สายตรวจ อุทยานแห่งชาติปางสีดา (ปด. 2 คลองหมากนัด)
9	Tawei Thongkla	ทวี ทองกล้า	สายตรวจ อุทยานแห่งชาติปางสีดา (ปด. 2 คลองหมากนัด)

Team 3 – Huay Nam Yen from Km 13 - 25

Initially Team 3 proposed a route southwards off the road at Km18 to exit again at Km15. However, after a downhill trip of about 300m along a well-worn tourist trail through dry evergreen forest from Huai Nam Yen PD5 sub-station the trail finished at a waterfall. The habitat below this changed to bamboo and the trail was indistinct. The only route was along a stream, clambering over extremely slippery green rocks, after two falls this way was deemed too dangerous and so this original plan was abandoned. Plan B was to place cameratraps using the road as a transect, placing them approximately every 1Km. The one month period includes the busiest time in Pang Sida during New Year when hundreds of tourists travel along the laterite road to the viewpoint at Km25. Consequently, all the cameras were placed slightly off the road varying distances.

Practicing navigation and data collection techniques started immediately and continued throughout the exercise. For the simple navigation skills random points were chosen and the rangers were asked to mark the site using the GPS, extract the 6 figure UTM and show the location on a map. Then they were asked further navigation questions, such as a bearing to a hilltop, the shape of that hilltop feature, or to describe the best route to a certain location explaining why they thought it was the easiest, or most appropriate. Each time wildlife or poaching sign was located it was entered into the standard data sheet. Sign included; elephant (at almost every location), sunbear, gaur, civet and sambar deer. One aloe-wood collector's camp was found with approximately 30 fresh snares (บ่วง) set. However, the camp was cold and no new sign of poachers were found. It is assumed that the poachers had

moved camp about a week previously, but still used the area for trapping animals for food as they collected aloe-wood.

Over the 2 days 10 cameras were placed in locations on animal trails, mineral licks and by drinking points.

Team 3 Ranger removing snares

Conclusion

12 cameras placed by Team 1 onwards from Km25
11 cameras placed by Team 2 along trail from Km9
10 cameras placed by Team 3 along the road

Total cameratraps for December to January = 33

These will be left in-situ for one month after which they will be checked, SD cards downloaded and results reviewed.

Species presence data is displayed in Appendix vi

Closing ceremony

On the last day of the course after the post field section debrief and final classes a short closing ceremony was held. During the formalities 3 complete sets of patrol maps and data sheets were given to the park superintendent Mr. Chatri Padungpong. These showed where the patrols had surveyed and contained all violation and wildlife data collected. There were also plaster casts of tiger tracks recorded from the Km25 area.

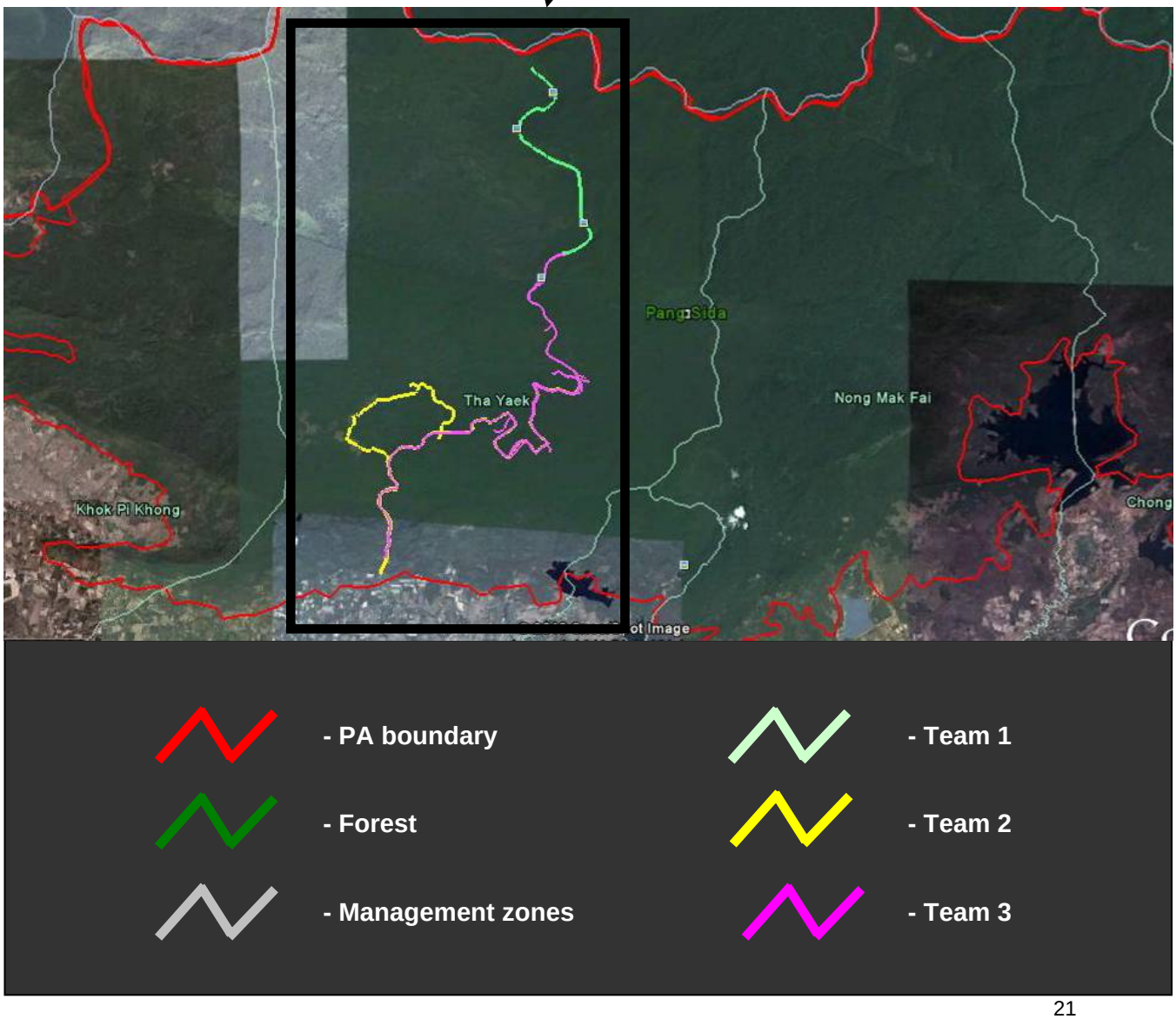
Finally essential field equipment was donated and formally handed over to the superintendent. This included 10 Canon digital cameras, 5 Garmin 60Csx GPS, Duracell batteries and a PC computer to store field data.

These items were purchased with support from by Rufford Small Grants, Panthera, Care for the Wild International and David Shepherd Wildlife Foundation.

Equipment donation to Pang Sida Superintendent Mr. Chatri Padungpong.

Closing ceremony group photograph

Maps: RBDC #4: Three field training patrol-survey routes



Appendix III

Course Schedule

Prep Day #1 Date: Monday 13 December 2010, TRAVEL & REGISTRATION			
Ser	Time	Subject / Activity	Instructor / Coordinator / Interpreter & comments
9	1300-1400	Travel to course location	
10	1400-1500	FF Team arrives and sets-up	
11	1500-1600	Students arrive at Pang NP Sida HQ	
12	1600-1700	Student Registration (photo)	
13	1700-1800	Student Registration (photo)	
14	1800-1900	Dinner	
15	1900-2000	Introduction to FF	Powerpoint and DVD (Sayan)
16	20.00-21.00	Free time	

Day #2 Date: Tuesday 14 December 2010 OPENING CEREMONY, INTRODUCTION TO PAs & NAVIGATION 1			
Ser	Time	Subject / Activity	Instructor / Coordinator / Interpreter & comments
1	0500-0600	Preparation for days activities	
2	0600-0700	Breakfast	
3	0700-0800	Course Orientation	FF & KY Trainers
4	0800-0900	Opening Ceremony/Group Photo	Park Chief, FF
5	0900-1000	What are protected areas? & overview of Thailand's PA system	Thattaya - PowerPoint
6	1000-1100	Value of Biodiversity and PAs	Thattaya - PowerPoint
7	1100-1200	Ranger protector of biodiversity Roles & responsibility of ranger jobs, with emphasis on wildlife ranger (review ARCBC Standards)	Powerpoint
8	1200-1300	Lunch	
9	1300-1400	Maps and Border Information	KY Trainer
10	1400-1500	Grid References	KY Trainer
11	1500-1600	Compass	KY Trainer
12	1600-1700	Bearing	KY Trainer
13	1700-1800	Dinner	
14	1800-1900	Map or Compass extra	Revision for slow learners
15	1900-2000	Free time	

Day #3 Date: Wednesday 15 December 2010 NAVIGATION #2 & INTRODUCTION TO WILDLIFE			
Ser	Time	Subject / Activity	Instructor / Coordinator / Interpreter & comments
1	0500-0600	Preparation for days activities	
2	0600-0700	Breakfast	
3	0700-0800	Map to Ground	KY Trainer
4	0800-0900	GPS - Theory	Thattaya, TB
5	0900-1000	GPS – Functions of a GPS and practical #1	Thattaya and KY Trainers
6	1000-1100	GPS practical #2	Thattaya and KY Trainers

7	1100-1200	GPS practical #3	Thattaya and KY Trainers
8	1200-1300	Lunch	
9	1300-1400	Navigation Ex Briefing	Thattaya
10	1400-1500	Navigation Exercise	All
11	1500-1600	Wildlife Monitoring Methods	Thattaya
12	1600-1700	Wildlife Identification	Thattaya
13	1700-1800	Dinner	
14	1800-1900	Wildlife track and sign	Thattaya,
15	1900-2000	Wildlife of Thailand's PAs	Slide presentation, Bruce K

Day #4 Date: Thursday 16 December 2010
DATA COLLECTION, REPORTING & FIELD PRACTICAL

	Time	Subject / Activity	Instructor / Coordinator / Interpreter & comments
1	0500-0600	Preparation for days activities	
2	0600-0700	Breakfast	
3	0700-0730	Use of digital cameras	Sayan
	0730-08.30	Use of cameratraps	Thattaya
4	08.30-0900	Making plaster casts of wildlife tracks	KY trainers
5	0900-1000	Use of standard data collection forms	Thattaya
6	1000-1100	Prepare for field	All (plan which group to which area)
7	1100-1200	Lunch	Take packed dinner into field
8	1200-1300	Leave to field	
9	1300-1400	Split into 3 x 10 teams including staff and head into field	Require at least 4 vehicles
10	1400-1500	Survey and record data using forms, GPS, cameras	Per team rotate and check all participants on navigation (map, compass & GPS), camera use and forms
11	1500-1600	Survey and record data	Per team (as above)
12	1600-1700	Survey and set camp	Per team (as above)
13	1700-1800	Dinner in field	Prepared in advance
14	1800-1900	Free time	
15	1900-2100	Free time	

Day #5 Date: Friday 17 December 2010
FIELD PRACTICAL (DATA COLLECTION & REPORTING)

	Time	Subject / Activity	Instructor / Coordinator / Interpreter & comments
1	0500-0600	Prepare breakfast and lunch	
2	0600-0700	Breakfast	In field
3	0700-0800	Survey and record data	Per team (as above)
4	0800-0900	Survey and record data	Per team (as above)
5	0900-1000	Survey and record data	Per team (as above)
6	1000-1100	Survey and record data	Per team (as above)
7	1100-1200	Survey and record data	Per team (as above)
8	1200-1300	Lunch	In field
9	1300-1400	Survey and record data	Per team (as above)
10	1400-1500	Survey and record data	Per team (as above)
11	1500-1600	Start towards survey end point	Per team (as above)

12	1600-1700	Travel to PD5 sub-station	Per team (as above)
13	1700-1800	Dinner	At sub-station
14	1800-1900	Free time	
15	1900-2000	Free time	

Day #7 Date: Saturday 18 December 2010 FIELD PRACTICAL (DATA COLLECTION, REPORTING AND CONCLUSION)			
	Time	Subject / Activity	Instructor / Coordinator / Interpreter & comments
1	0500-0600	Travel back to HQ	
2	0600-0700	Breakfast	
3	0700-0800	Debrief from survey at HQ	Team 1,2,3
4	0800-0900	Final exam	
5	0900-1000	Download GPS & Cameras	Survey forms copied for park
6	1000-1100	Introduction to ArcView / MIST	Thattaya and Wanchai
7	1100-1200	Closing ceremony and donation of equipment to park	
8	1200-1300	Final Lunch	At Pang Sida HQ restaurant
9	1300-1400	Rangers leave training site back to respective posts	
10	1400-1500	FREELAND staff depart	
11	1500-1600		
12	1600-1700		
13	1700-1800		
14	1800-1900		
15	1900-2000		

Appendix IV. Participant Group Photo

Appendix V

COURSE RECOMMENDATIONS

1. Participants should be selected and reviewed by FF in advance to make best use of resources, ensure full participation and to confirm they work as a patrol ranger.
2. All pre/post tests and class evaluations must be prepared in advance
3. Improve section on data downloads and management, especially MIST
4. Standing orders need to be issued by park management to ensure data forms are used for each patrol and returned to a senior staff member for delivery to a data manager immediately following the patrol
5. More Thai language course hand-outs are required, such as navigation, and GPS
6. The course should be at least 6 full days and 7 if possible
7. More equipment e.g. GPS is required for post course donation and park use

Appendix VI

EVALUATION (feedback from course participants)

Conclusions of 25 responses

1. Almost all rangers had some skills relating to topics taught prior to the training course, but not at the level of this course, so the participants the course was useful.
2. Navigation and use of maps were considered the most difficult
3. GPS was the easiest topic in this course, but all rangers need more time to practice in the field. They also want more time to use GPS individually, to gain a better understanding.
4. All rangers agreed that field practice helps reinforce skills after the classroom.
5. They also felt more confident using technical equipment such as GPS, map and data sheets in the field following the course.
6. All equipment and documents used during course were simple and easy to understand.
7. Many participants suggested ***more time*** should be allowed for field practice.
8. All rangers were confident with trainers' knowledge in the course topics, such as navigation, map, cameratrap setting.

VII.i Wildlife Species encountered during RBDC#4 training course field sections

The tables below conclude the notable incidents/sightings during the field section.

Combined all 3 teams wildlife encounters

ลำดับที่	ชื่อไทย	ชื่อสากล	วิธีการสำรวจ	
			การสังเกต[1]	กล้องดักถ่ายภาพ[2]
Ser.	Thai Name	Common Name	Observed*	Cameratrap photo
Mammals				
1	เก้ง	Muntjak (Barking deer)	✓	✓
2	กวาง	Sambar deer	✓	✓
3	กระทิง	Gaur	✓	✓
4	เลียงผา	Serow	✓	✓
5	หมูป่า	Wild boar	✓	✓
6	ช้างป่า	Elephant	✓	✓
7	เม่นใหญ่แผงคอยาว	Malayan porcupine	✓	✓
8	ลิงกัง	Pig-tailed Macaque	✓	✓
9	ชะนีมงกุฎ	Pileated Gibbon	✓	-
10	หมูหริ่ง	Hog Badger	-	✓
11	ชะมดแผงหางปล้อง	Large Indian Civet	✓	✓
10	ชะมดแผงสันหางดำ	Large Spotted Civet	-	-
11	อีเห็นธรรมดา/อีเห็นข้างลาย	Common Palm Civet	-	✓
12	หมีหมา	Sunbear	✓	✓
13	หมีควาย	Asiatic Black Bear	✓	✓
14	เสือลายเมฆ	Clouded Leopard	-	✓
15	เสือโคร่ง	Tiger	✓ (T1, T2)	✓ (T1, T3)
16	หมาไน	Dhole (Asiatic Wild Dog)	✓	✓
17	พระ	Human sign (Monk)		✓
18	นักท่องเที่ยว	Human sign (Tourist)		✓
19	นายพราน	Human sign (poacher)	✓	✓
20	เจ้าเจ้าหน้าที่	Human sign (Ranger)		✓
Birds				
1	ไก่ป่า	Jungle fowl	✓	-

2	ไก่ฟ้าพญาลอ	**Siamese fireback**	✓	-
3	นกโกโรโกโส	**Coral-billed ground cuckoo**	-	-
4	นกแซงแซวหางบ่วง	**Racket-tailed Drongo**	✓	-
5	นกเขาเขียว	**Emerald Dove**	✓	-
6	นกกระปูด	**Malkoha**	✓	-
7	เหยี่ยวนกเขา	**Goshawk spp.**	✓	-
8	เหยี่ยวภูเขา	**Mountain Hawk Eagle**	✓	-

**Observed; This can mean direct (seen or heard) or indirect (track and sign)*

Overview: 8 species of carnivores were recorded, 6 species of ungulates, 2 primates and 1 rodent

VII.ii Violations encountered during training course field section

ลำดับที่	ชื่อไทย	ชื่อสากล	วิธีการสำรวจ	
				การสังเกต[1]
Ser.	**Thai Name**	**Common Name**	**Incident code****	**Observed***
1	แค้มป์นายพราน	**Poacher camp**	**7**	✓
2	บ่วง	**Snares**	**2**	✓
3	อื่นๆ/อาวุธ (กระสุนปืน)	**Other/weapon (gunshot)**	**6/11**	✓

**Observed; this can mean direct (seen or heard) or indirect (track and sign)*
***See Patrol standard datasheet for explanation of incident codes*

Appendix VIII. Sample photographs

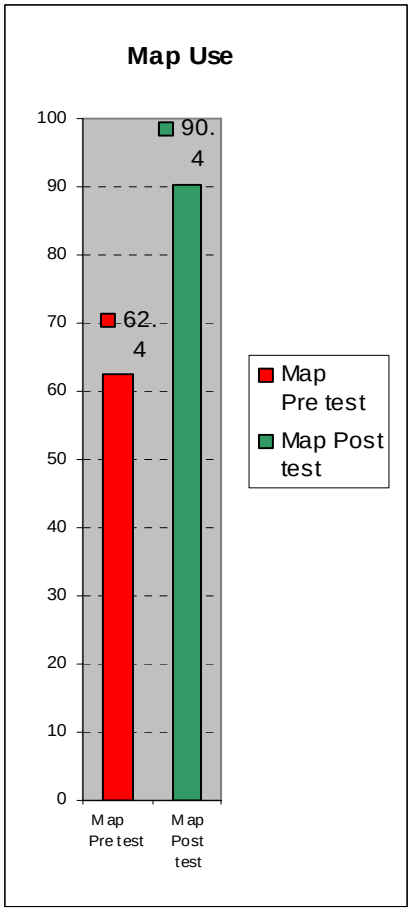
Cameratraps

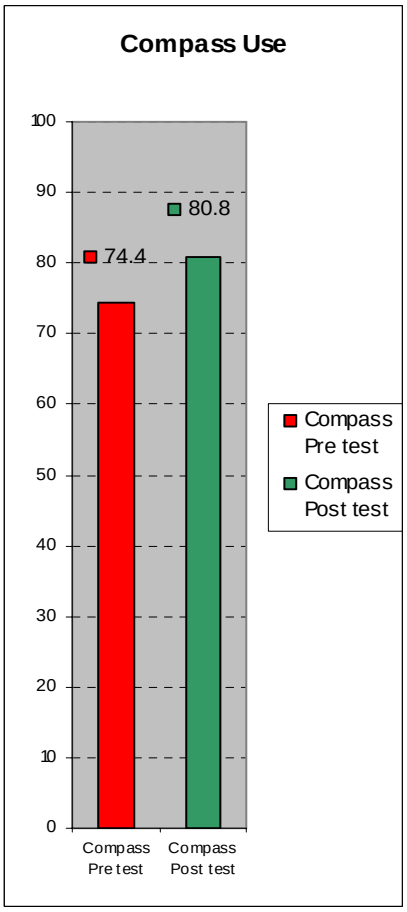
Photos from course

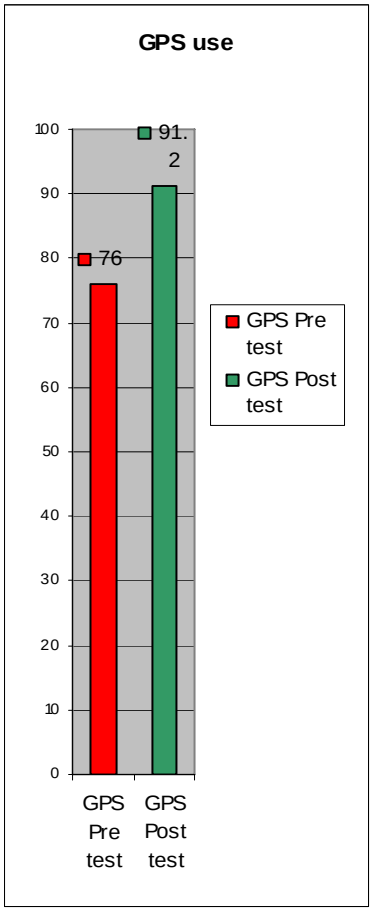
Photos from field survey

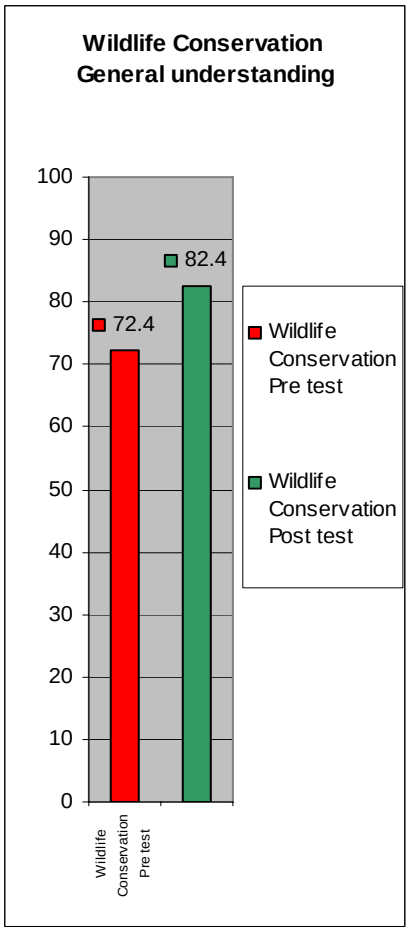
Appendix IX. Conclusions of course pre/post tests

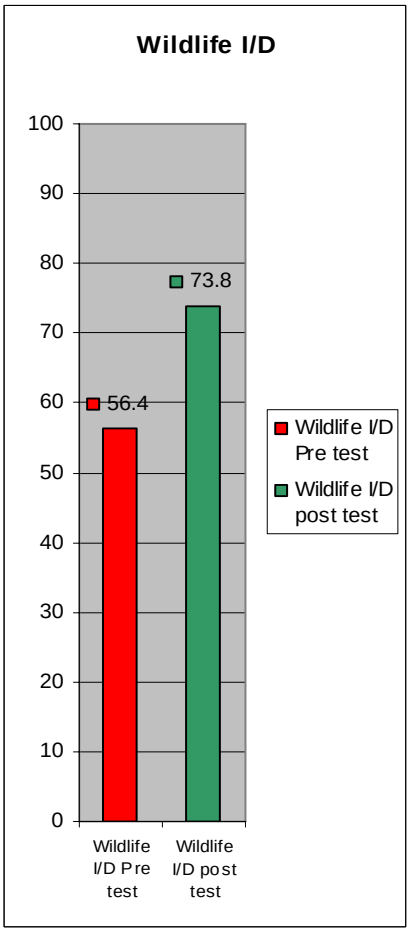
There were 25 students in the class. All completed evaluations and tests.







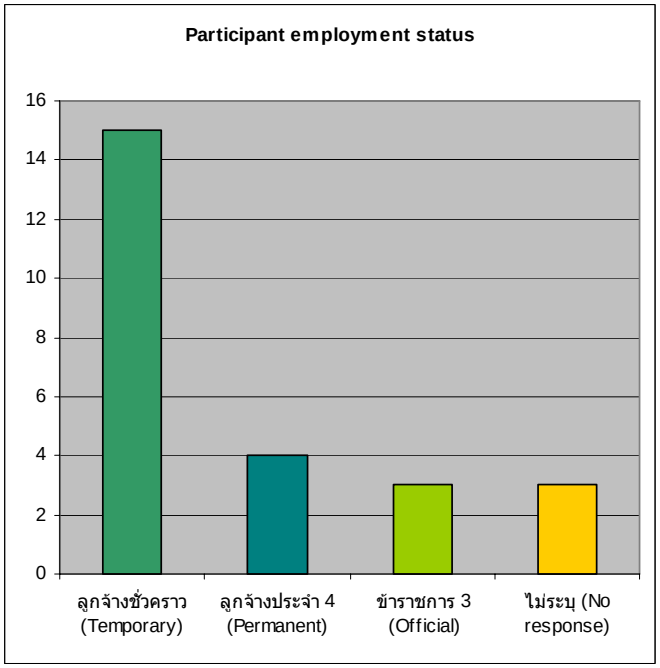


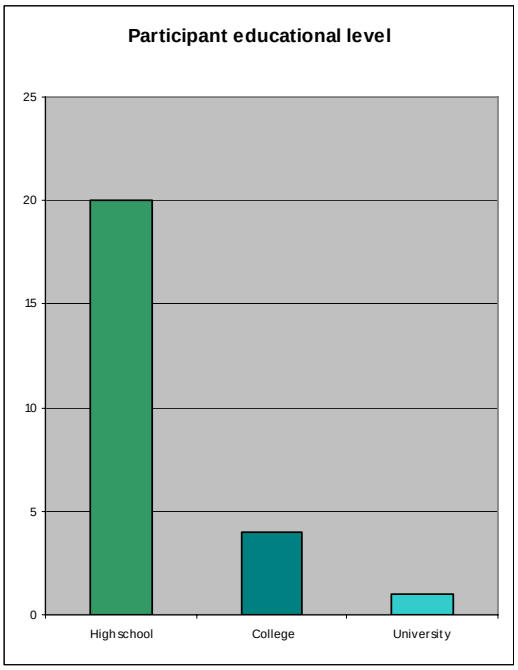


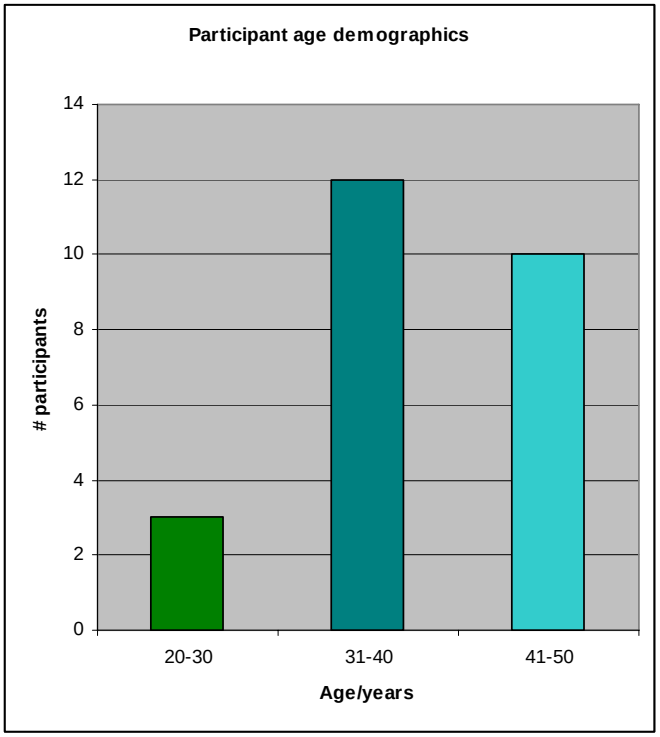
Position	Student #	Score	PA
1	23	90	PS
2	21	87	KY
3	13	87	PS
4	7	87	PS
5	2	87	PS
6	12	85	PS
7	22	84	PS
8	14	83	TP
9	17	82	KKW
10	6	82	PS
11	20	81	PS
12	11	80	PS
13	1	80	PS
14	24	79	PS
15	5	79	PS
16	19	78	PS
17	9	78	PS
18	18	77	PS
19	8	76	KKW
20	25	75	PS
21	3	74	PS
22	10	72	PS
23	16	71	PS
24	15	70	PS
25	4	56	TP

PS=Pang Sida NP, KY=Khao Yai NP, TP=Ta Phraya NP, KKW=Klong Krua Wai WS

Appendix X. Participant demographics








WILDLIFE
RANGER