



SMART PATROL *for* SMART PROTECTION

OF THAILAND'S WORLD HERITAGE SITE IN WESTERN FOREST COMPLEX



EXECUTIVE SUMMARY REPORT





Photo by Eleanor Briggs

WHY SMART PATROL?

Valuable natural resources in protected areas cannot survive with weak protection. Patrol is globally proved as an essential form of protection of valuable resources in protected areas, especially the commercial high value species. Sadly, many of such species have been severely diminished or vanished from many protected areas where park rangers are available. Therefore, managers and conservation scientists have tried to modernize the patrol activity with science and technology to help park rangers cope with the situation. In Thailand we call this development **“Smart patrol”**. It aims to equip park rangers and managers with information technology to better protect the areas, boost their morale, be proud of their duty. The ultimate purpose is to guarantee that the species and their intrinsic values can forever survive the greedy demands and indifferences in our human society.



Photo by Kwanchai Waitanyakarn/WCS Thailand



Photo by Kwanchai Waitanyakarn/WCS Thailand

EXECUTIVE SUMMARY

The idea to improve the patrol system for park rangers in protected areas in Thailand has received serious attention since the last decade. During 2000-2003 the government has initiated different training courses for park rangers in the Western Forest Complex, the best remaining protected area system in Thailand, to use GPS for their patrols together with a simple wildlife survey database. In 2004-2005 the first patrol database was introduced to some protected areas under the **CITES MIKE (Monitoring Illegal Killing of Elephants)**. The modified MIKE database has been introduced to Huai Kha Khaeng Wildlife Sanctuary (HKK) in 2005 together with intensive training courses of park rangers and managers. The training is also followed-up by other technical and financial support from the government and other conservation organizations, particularly the Wildlife Conservation Society. The patrols have become systematic and the cycle of protection and management of the area have been based on up-to-date information. HKK managers and park rangers have transformed the way to run protected areas completely from day-to-day basis to more systematic and science-based. Later the Smart patrol system has been adopted to use for the whole Huai Kha Khaeng and Thung Yai Naresuan World Heritage Site. It has produced a significant impact to the system of protected areas in Thailand when, at one point, the Department of National Parks, Wildlife and Plant Conservation has set aside large amount of budget to train park rangers and managers in other areas under the Smart patrol system. The Global Tiger Initiative and Smithsonian Institute have also sponsored managers from different tiger-range countries to receive the Smart patrol training in HKK. The current patrol database used in many protected areas in Thailand is **MIST (Spatail Management Information System)**. In 2013 a new powerful patrol database called **SMART (Spatial Monitoring and Reporting Tool)** is being introduced. With SMART it would take the patrol efficiency to another stage that is more powerful with the combination of patrol data and other types of enforcement and management data. Most importantly protected areas can now be managed in more transparent and efficient way under a concrete monitoring system that can guarantee the integrity of natural resources they mean to conserve for the future generations.

SMART PATROL

FOR SMART PROTECTION OF THAILAND'S WORLD

- 1 WHY SMART PATROL?
- 3 EXECUTIVE SUMMARY
- 7 THE WORLD HERITAGE CRITERIA FOR HUAI KHA
KHAENG & THUNG YAI WILDLIFE SANCTUARIES
- 9 THREATS TO HKK-TY WORLD HERITAGE SITE
- 11 DEVELOPMENT OF SMART PATROL SYSTEM IN
WEFCOM

HERITAGE SITE IN WESTERN FOREST COMPLEX

13 THE DEFINITION OF SMART PATROL SYSTEM

1st QUALIFICATION: ADEQUATE NUMBERS OF PATROL STAFF

2nd QUALIFICATION: GOOD EQUIPMENT AND SUPPORT

3rd QUALIFICATION: QUALITY TRAINING

4th QUALIFICATION: STANDARDIZED LAW ENFORCEMENT
MONITORING

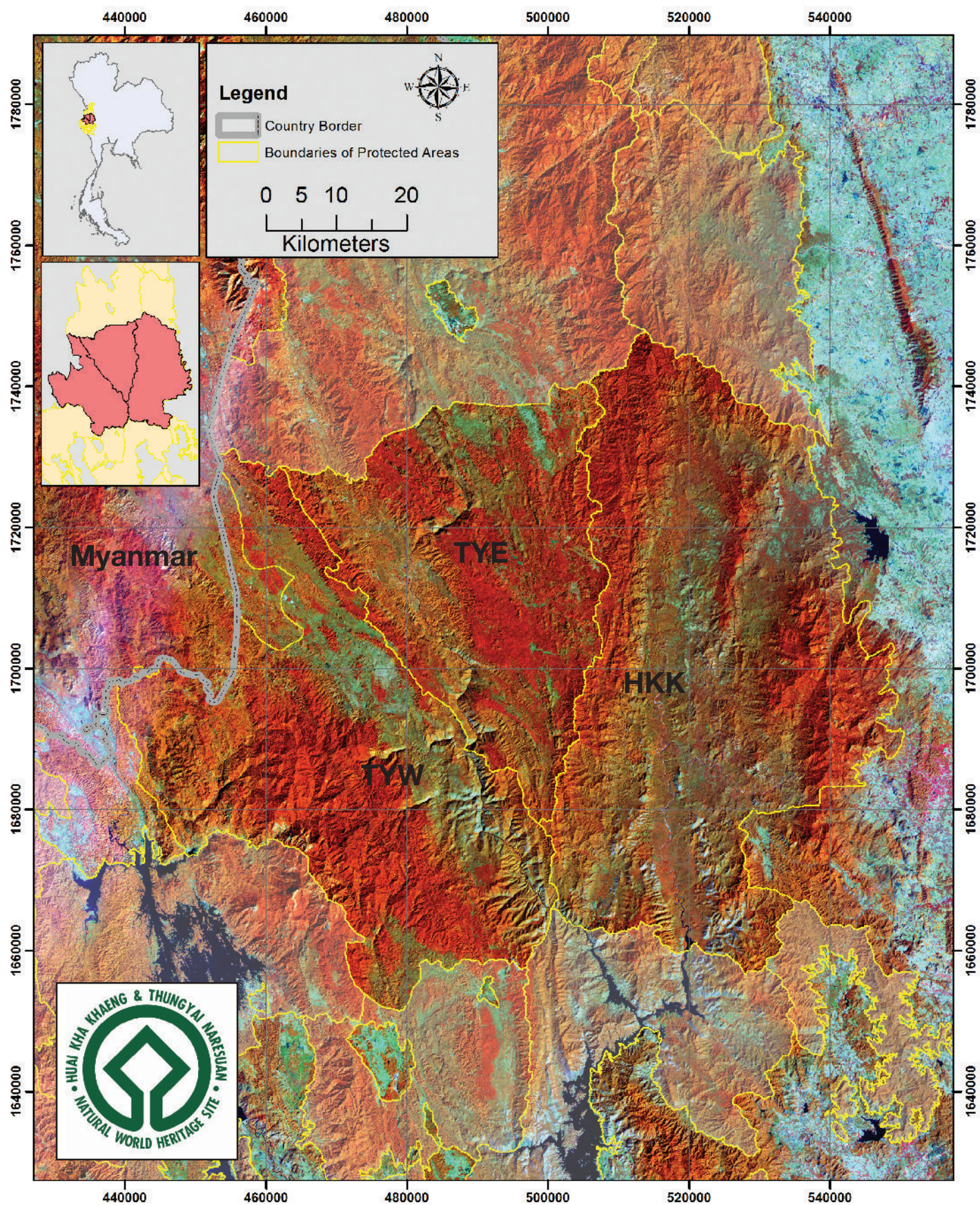
5th QUALIFICATION: SUPPORTED BY STRONG INTELLIGENT
NETWORKS

6th QUALIFICATION: LEM DATA FULLY INTEGRATED INTO
STRATEGIC PLANNING AND DEPLOYMENT OF PATROL

37 EXPANSION OF SMART PATROL SYSTEM IN THAILAND

38 INTRODUCTION OF SMART

Photo by Huai Kha Khaeng Wildlife Sanctuary



THE WORLD HERITAGE CRITERIA FOR HUAI KHA KHAENG & THUNG YAI WILDLIFE SANCTUARIES

Year of inscription: 1991

Huai Kha Khaeng and Thung Yai Naresuan Wildlife Sanctuaries meet 3 criteria for being a world heritage under the World Heritage Committee's Operational Guideline 2005 as shown below.

Criteria VII:

To contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance

Criteria IX:

To be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals

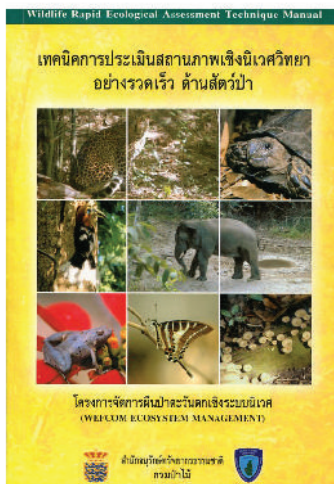
Criteria X:

To contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation



THREATS TO HKK-TY WORLD HERITAGE SITE

- **Tiger poisoning** for skin, bones, fresh, and body parts has been a major threat to tigers in HKK-TY with cases encountered between 2010-2011.
- **Poaching of ungulate** including banteng, gaur, sambar, muntjac, wild pig is a major threat in HKK-TY that has dwindled ungulate populations especially the areas near human settlements.
- **Habitat alteration** to farmland has occurred near villages located inside and along the bufferzones of HKK-TY.
- **Large-scale non-timber forest product collections** happening in HKK have not only depleted some food for wildlife but also disturbed wildlife in many ways.
- **Livestock** in the area near villages in TY East and West increases chances of spreading diseases into wild ungulates.
- **Large development projects** particularly dam and road constructions have been reemerging in WEFCON landscape where HKK-TY is located and they can be severely destructive to tiger and other wildlife and their habitat.
- **Fishing** is one of the major threats in TY East and West. Local people use fishing nets blocking the streams and severely depleting fish from some streams in TY. Local people who fish often kill otters which they found entangled with fishing nets.
- **Off-road vehicles** come and test their endurance in TY West. Sometime they like to come in big groups that can be disturbing wildlife and wilderness areas in TY West.



2002



2005



2008



2012

DEVELOPMENT OF SMART PATROL SYSTEM IN WEFCOM

The idea to strengthen park rangers with an information-based enforcement system has been around among active protected area managers in the government since early 2000s. The concern was originated from a genuine concern that a chronic symptom of inefficient protection management leaving park rangers under low morale and self-esteem. The Department of National Parks, Wildlife and Plant Conservation (DNP) launched an extensive training programs for park rangers all over WEFCOM in 2000-2003 under the project **“Western Forest Complex Ecosystem Management Project”**. The training combined physical courses with patrol data gathering using GPS and standardized data forms. Later CITES MIKE and NGOs, especially WCS, have also joined DNP to help modernize the system as shown in the brief chronicle developments as following.

- **2000 - 2003:** Park ranger training courses for 17 protected areas in WEFCOM that combined use of GPS and simple wildlife survey data forms during the patrol. However there was no comprehensive database for patrol.
- **2004 - 2005:** CITES-MIKE (Monitoring Illegal Killing of Elephants) database and park ranger training courses were first introduced to 2 protected areas under MIKE target sites including Salakpra Wildlife Sanctuary and Kui Buri National Park.
- **2005 - 2007:** Patrol database for Huai Kha Khaeng Wildlife Sanctuary was developed by WCS Thailand under ACCESS platform through the modification of MIKE data structure (with permission from MIKE Southeast Asia, Dr. David Lawson) by adding more target species. Park rangers in HKK-TY received a series of Smart patrol training courses from DNP & WCS teams, monthly patrol meetings initiated and run, patrols planned under information.
- **2008 - 2012:** HKK has become a training site for park rangers and managers from different protected areas in Thailand. HKK patrol officers and rangers have capacity to be patrol trainers to train park rangers in different protected areas in Thailand (Detail in this report).
- **2011 - 2012:** The Global Tiger Initiative (GTI) and Smithsonian Institute together with trainers from DNP and WCS organized the Smart patrol training courses in HKK for managers and conservation partners in 13 tiger range countries.
- **2012 - 2013:** SMART software has developed to be a powerful patrol database for HKK-TY and other protected areas.



Photo by Kwanchai Wattanakorn/WCS Thailand

THE DEFINITION OF SMART PATROL SYSTEM

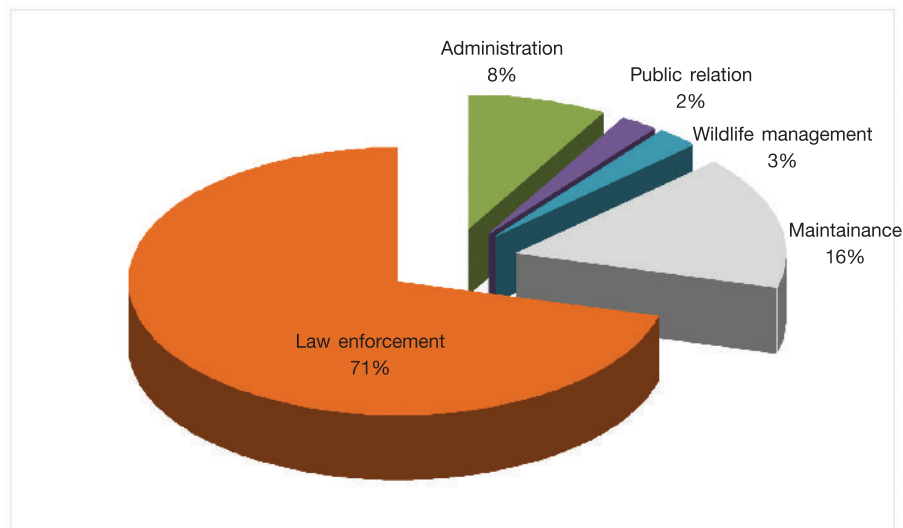
The Smart patrol system refers to the implementation of a suite of components necessary for effective law enforcement including: adequate numbers of patrol staff trained in enforcement techniques, supported by strong intelligence-networks and equipped with the necessary infrastructure, equipment and resources needed for patrolling, standardized law enforcement monitoring (LEM) protocols implemented and LEM data fully integrated into the strategic planning and deployment of patrols

The effective Smart patrol promotes **“good governance”** and **“best practice”** by empowering park rangers to fully engage in decision making process with park managers.

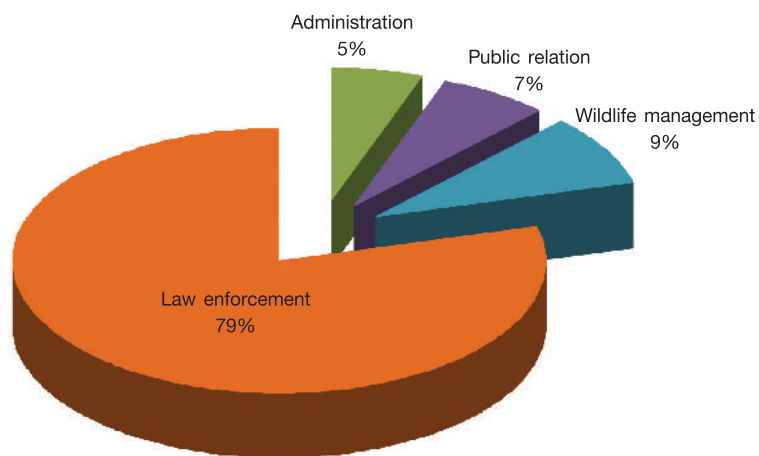
The following are the key qualifications for Smart patrol system.



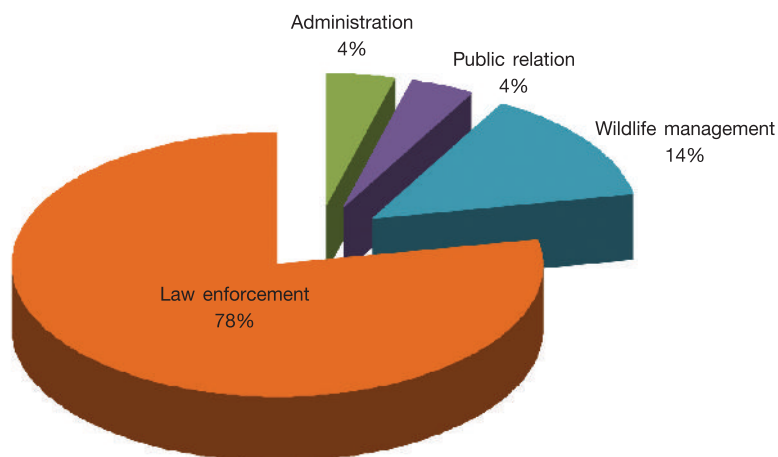
Photo by Kwanchai Waitanyakarn/WCS Thailand



Proportion of staff deployment in Huai Kha Khaeng Wildlife Sanctuary



Proportion of staff deployment in Thung Yai East Wildlife Sanctuary



Proportion of staff deployment in Thung Yai West Wildlife Sanctuary

1st QUALIFICATION: ADEQUATE NUMBERS OF PATROL STAFF

The first and perhaps most important component for Smart patrol system is for an area to have the number of patrol staff enough to protect forest and wildlife resources. It is important to realize that no matter how sophisticated software available, how often strategic planning deployed, and how many cases of arrests made, it is not enough to prevent poaching of wildlife and extracting of natural resources through insufficient patrol staff and efforts. Fortunately in Thailand the government has allocated a regular budget to hire park rangers and officers in large number, although more are needed. In Thailand some wildlife sanctuaries have been exemplified by giving good protection as details from the three wildlife sanctuaries below.

- Out of 230 staff of HKK (2,700 square kilometers), 71% of staff are deployed as full time patrol rangers.
- Out of 91 staff of TYE (1,500 square kilometers), 79% of staff are deployed on patrol.
- Out of 186 staff of TYW (2,200 square kilometers) , 78% of staff are deployed on patrol.

This proposition for staff deployed on patrol activity was much less in most protected areas in Thailand especially in national parks due to their responsibility on tourism that has caused a significant distraction from protection within many national parks.



Photo by Kwanchai Waitanyakarn/WCS Thailand

2nd QUALIFICATION: GOOD EQUIPMENT AND SUPPORT

A patrol team under the Smart patrol system needs to be well equipped with guns, GPS, digital camera, two-way radios. Good powerful guns can allow park rangers to have confidence to face poachers with sophisticated guns. Today, GPS has become a necessary tool for patrol guiding and data collection for park rangers in Thailand. Digital camera is also important to collect pictures of evidence, forest, wildlife encountered during the patrol.

Ration cost for patrol in Thailand is not covered by the government. Since the beginning of development, WCS, together with other local and international NGOs, have raised funds with partners to cover the ration cost for patrol teams in HKK-TY and WEFCON. This coverage is also extended to cover patrol camping equipment and other gear.

Park rangers normally gain confident and self-esteem when they wear high quality uniforms. Under support from WCS funding network park rangers in HKK-TY have received high quality tailor-cut uniforms every year. In Thailand tailor-cut uniforms are of higher quality than ready-made uniforms with bad fitting.

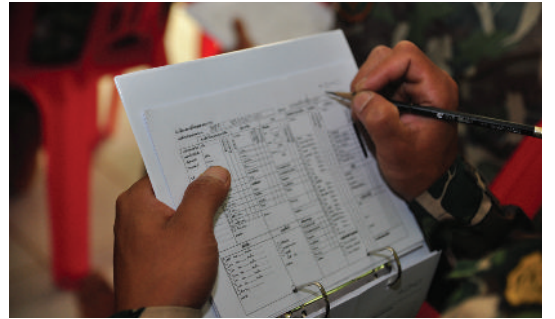


Photo by Kwanchai Waitanyakarn/WCS Thailand

Day 7
Practice Smart
Patrol



Day 6
Standardized
data form



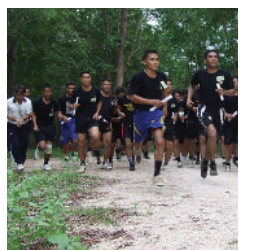
Day 4-5
Patrol technique



Day 2-3
GPS, Maps
and Compass



Day 1
Physical Strength



Smart Patrol Training Course

3rd QUALIFICATION: QUALITY TRAINING

A minimum length of a training course for Smart patrol normally takes one week for park rangers to be able to understand and use the system. It mixes physical training courses with technical ones. Physical training course has been taught by the Border Patrol Police and the Police's Special Operation Unit. The reason is because in Thailand responsibility and authority of park rangers are more similar to the Border Patrol Police than the military. The context of physical training course includes patrol planning, search and arrest, use of firearms, morale building and team work, patrol communicating and commanding, first aids, and physical strength improving.

For the Smart patrol technical course, DNP and WCS are the main trainers for HKK-TY. The context includes use of map, compass; use of GPS to collect key animal data, threats, and action taken; use of patrol data forms; identifications of key animal tracks and signs; practicing patrol data collection in real patrol; and running the monthly patrol meeting and planning.

This technical training course is intensive by aiming to have each individual of park rangers to understand and use the equipment. Therefore the numbers of participants in each course are limited to about 30 park rangers. To keep the class small is a cost-effective way of running park ranger training in this type of patrol system.

After the series training courses to introduce park rangers to the Smart patrol system until all ranger stations covered, every year at least one refreshment training course is conducted for HKK, TYE, and TYW.



Year	Number of Patrol Teams	Number of patrol days for all teams	Number of patrol trips	Average patrol days / trip	Average patrol days / team	Distance (km)
2006	18	1031	228	4.52	57.28	6,797
2007	20	1455	310	4.69	72.75	9,212
2008	20	2030	426	4.77	101.5	9,112
2009	20	2566	523	4.91	128.3	12,752
2010	20	2967	610	4.86	148.35	14,888
2011	20	3205	618	5.19	160.25	16,201
2012	20	2922	558	5.24	146.1	15,105

Table 1 Patrol effort in Huai Kha Khaeng Wildlife Sanctuary during 2006 to 2012

Year	Number of Patrol Teams	Number of patrol days for all teams	Number of patrol trips	Average patrol days / trip	Average patrol days / team	Distance (km)
2006	1	19	3	6.33	19	418
2007	2	36	5	7.2	18	275
2008	8	238	47	5.06	29.75	1,490
2009	9	770	136	5.66	85.56	4,807
2010	9	1026	160	6.41	114	9,358
2011	9	1489	211	7.06	165.44	10,020
2012	9	1329	183	7.26	147.67	10,458

Table 2 Patrol effort in Thung Yai East Wildlife Sanctuary during 2006 to 2012

Year	Number of Patrol Teams	Number of patrol days for all teams	Number of patrol trips	Average patrol days / trip	Average patrol days / team	Distance (km)
2007	9	102	36	2.83	11.33	528
2008	14	519	172	3.02	37.07	3,130
2009	15	1278	340	3.76	85.2	7,097
2010	17	2001	412	4.86	117.71	10,728
2011	17	2067	439	4.71	121.59	10,109
2012	17	2175	489	4.45	127.94	11,606

Table 3 Patrol effort in Thung Yai West Wildlife Sanctuary during 2007 to 2012

4th QUALIFICATION: STANDARDIZED LAW ENFORCEMENT MONITORING

With MIST as the patrol database various indicators can be drawn for measuring the patrol performance including patrol efforts, patrol coverage and intensity, poaching distribution and intensity, trends of poaching related indicators, and distribution abundance of protected species. The following are the details of these indicators.

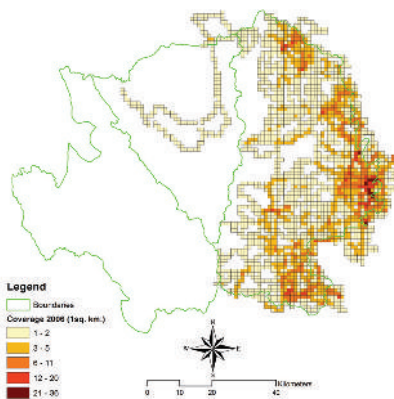
Patrol Efforts

Indicators of patrol efforts can be shown in many ways. In the following tables patrol efforts since the beginning of the Smart patrol system are shown for HKK, TYE, and TYW.

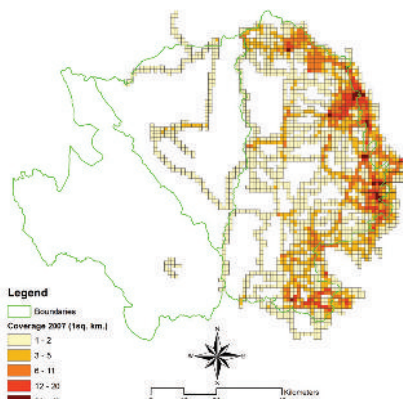
The patrol teams in HKK have performed one of the most intensive patrol efforts in Thailand. Their annual patrol distance for all teams combined has increased upto about 15,000 kilometers in the recent years. Each team has spent about 4-6 days in the forest for each patrol trip.

The efforts for TYE and TYW have dramatically improved since the start of the system. TYE has least number of staff. However, they have performed well under the existing manpower. In TYE a patrol team has spent more days in the forest patrolling for each trip.

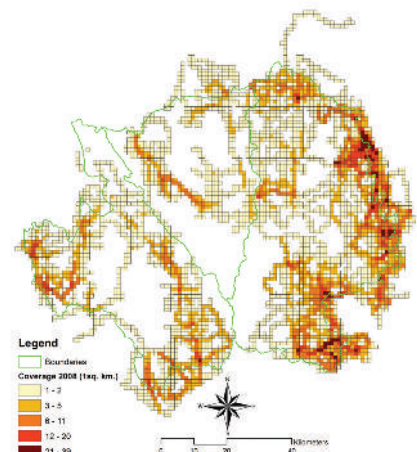
In TYW the significant improvement of the patrol efforts has clearly shown since 2010. This is mainly because of the strong leadership quality from the superintendent to modify the system for protection.



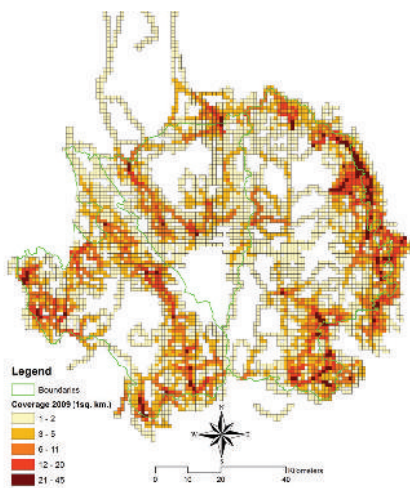
Map of patrol coverage and frequency of HKK-TY in 2006



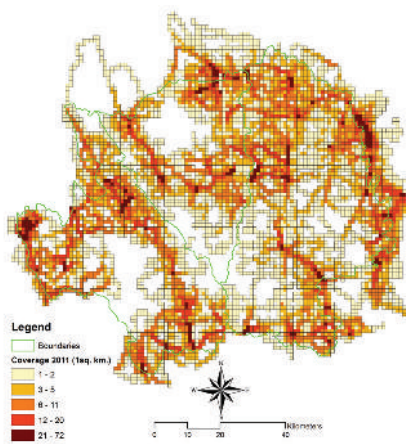
Map of patrol coverage and frequency of HKK-TY in 2007



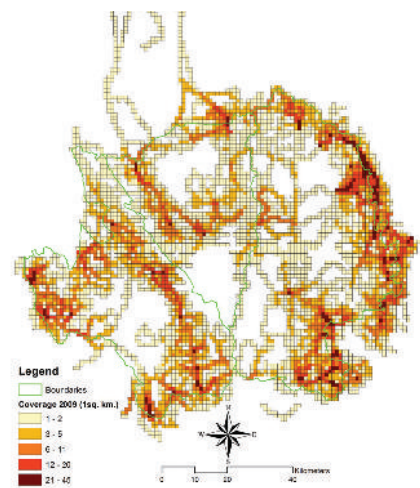
Map of patrol coverage and frequency of HKK-TY in 2008



Map of patrol coverage and frequency of HKK-TY in 2009



Map of patrol coverage and frequency of HKK-TY in 2010

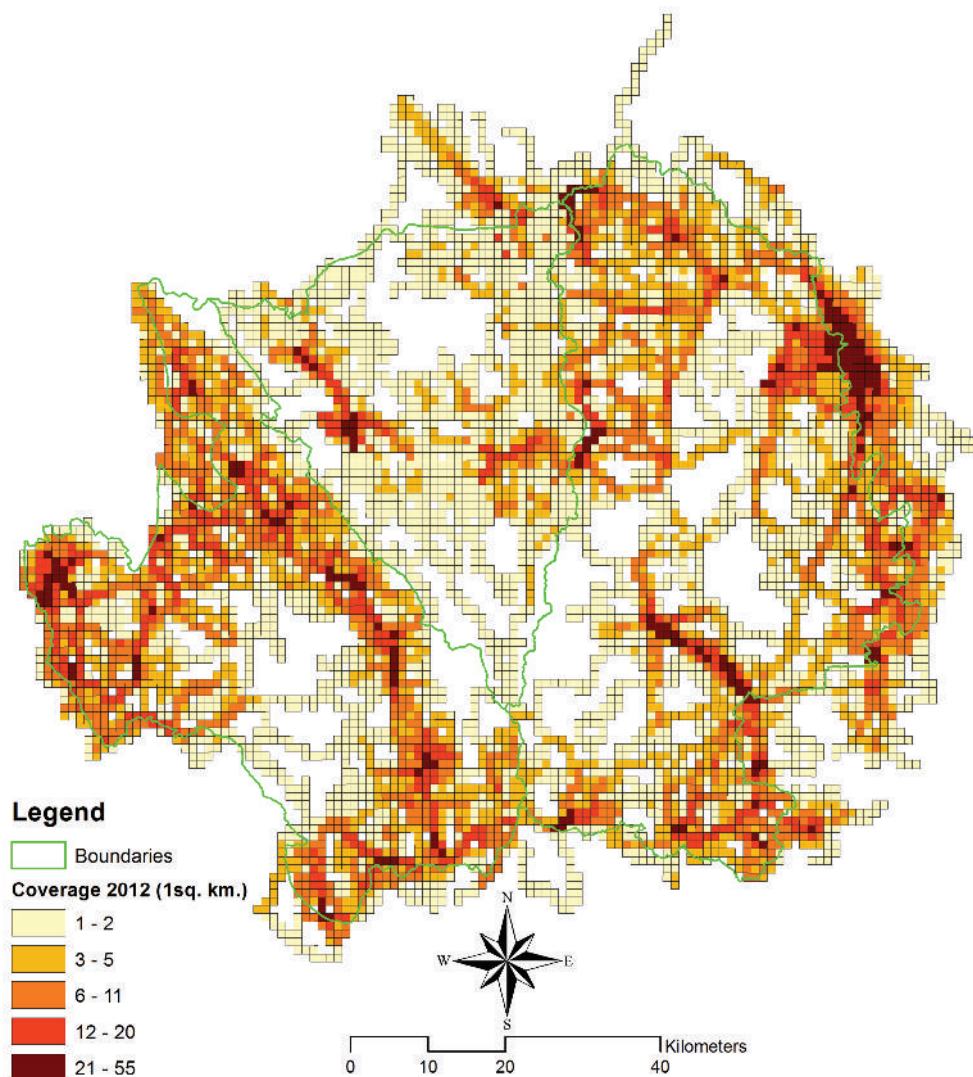


Map of patrol coverage and frequency of HKK-TY in 2011

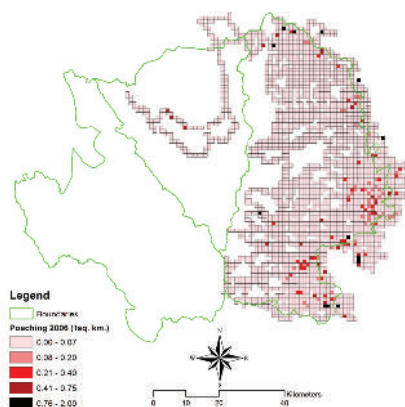
Map of Patrol Coverage & Intensity

A powerful patrol database can produce map of patrol coverage and frequency without the need of GIS software. Patrol coverage is shown in grid cells of an adjustable size. In this report a one-square-kilometer grid cell size is used. The map since the beginning of the patrol system in HKK-TY indicated improvement of patrol coverage over the years. Cells with higher patrol frequency are under dark red color. The map legend shows the classes of patrol frequency in a grid cell.

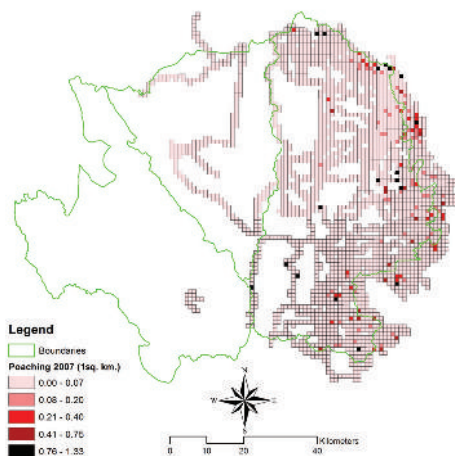
HKK has focused its patrols on the eastern, southern, and some part of western portion next to TYE. Patrol teams in TYW have had the patrols frequently covering in the area near villages in the north, east, and south parts.



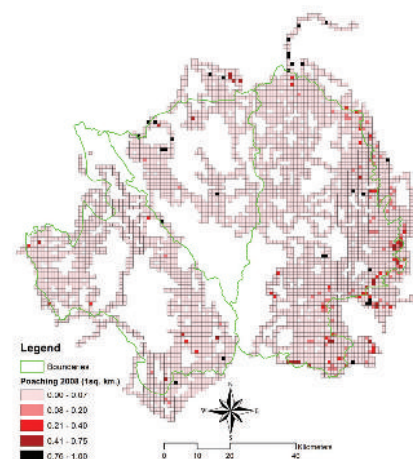
Map of patrol coverage and frequency of HKK-TY in 2012



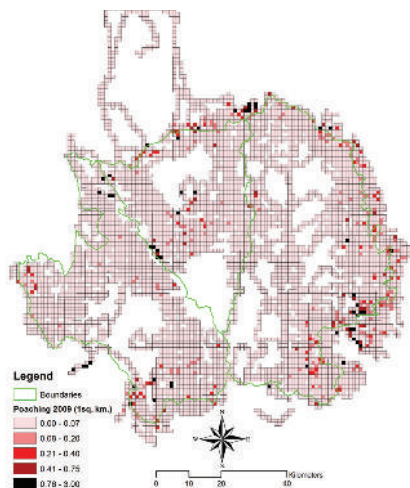
Poaching distribution and intensity in HKK-TY in 2006



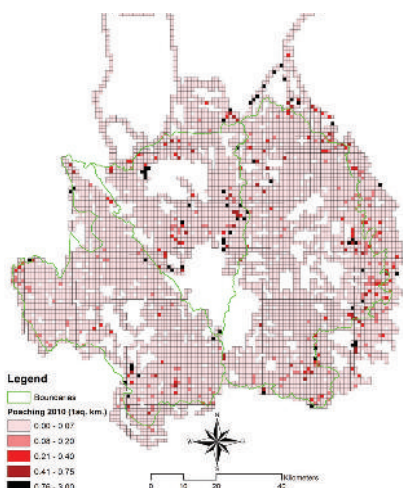
Poaching distribution and intensity in HKK-TY in 2007



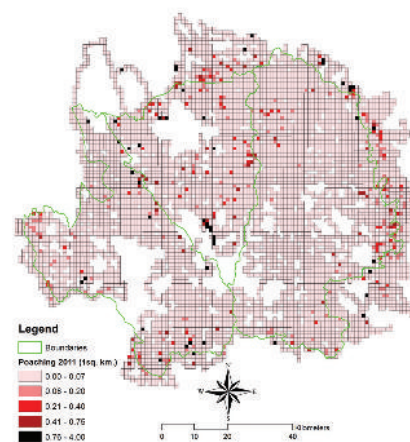
Poaching distribution and intensity in HKK-TY in 2008



Poaching distribution and intensity in HKK-TY in 2009



Poaching distribution and intensity in HKK-TY in 2010

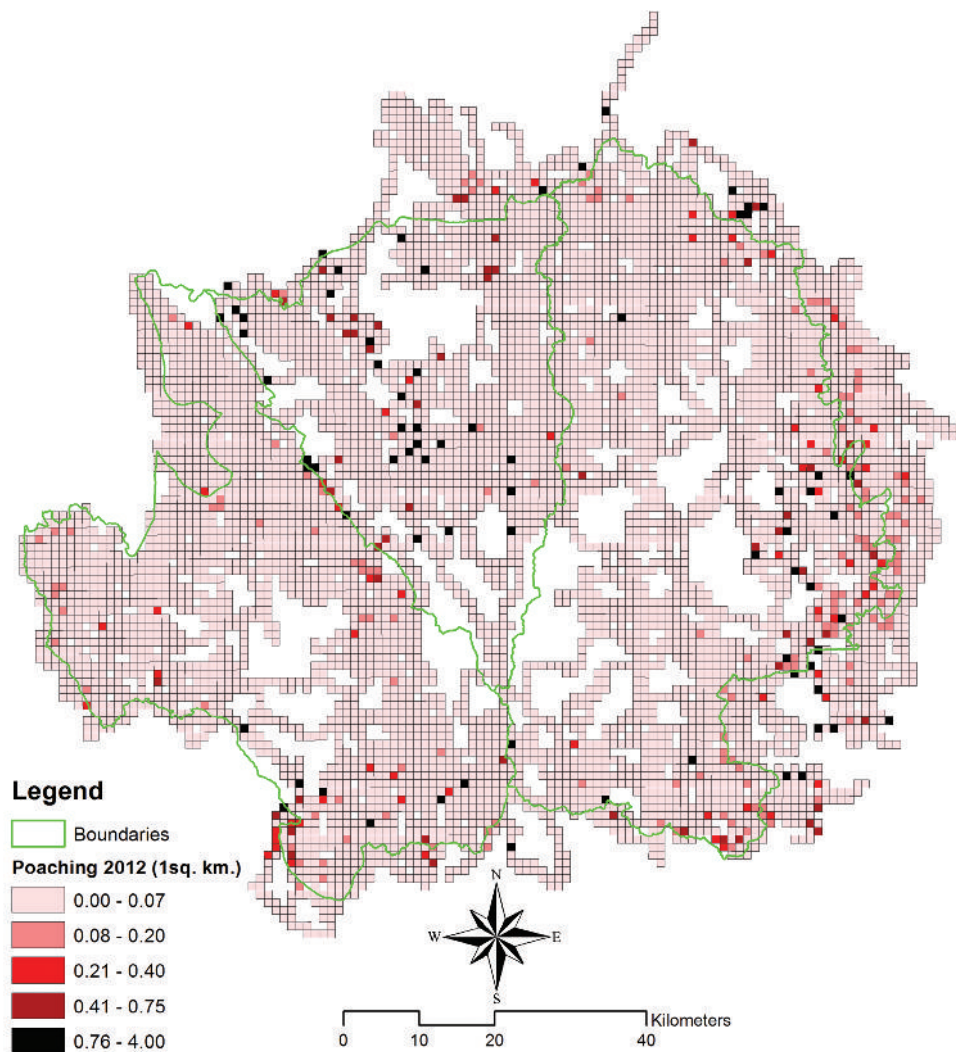


Poaching distribution and intensity in HKK-TY in 2011

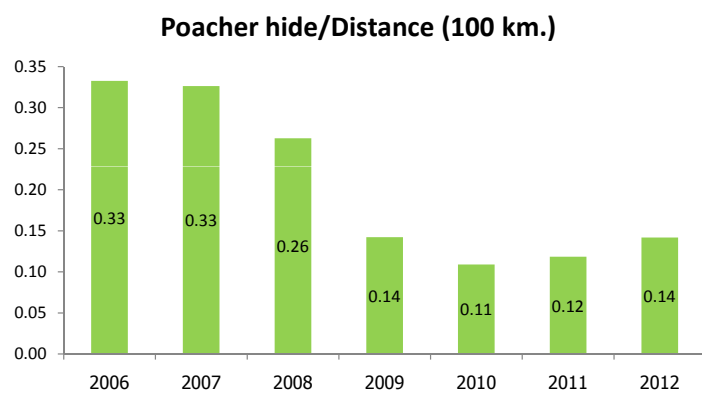
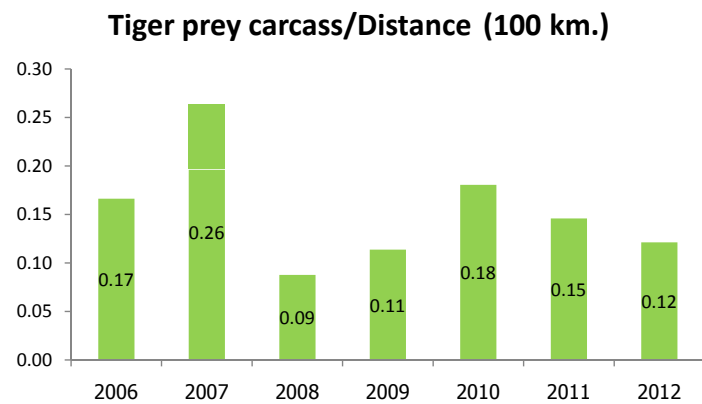
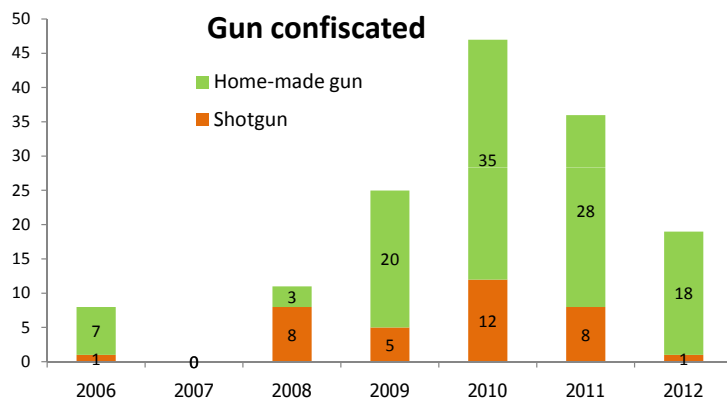
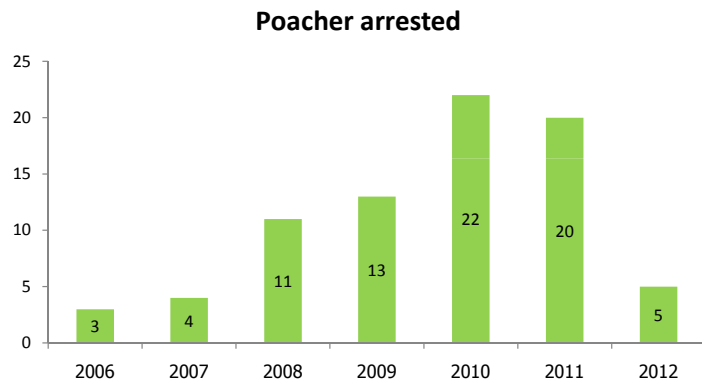
Map of Poaching Distribution and Intensity

It is also important to understand that having the Smart patrol system running does not mean there would be zero threats. As long as there are valuable resources there are threats. The system helps understand the pattern of threats better in order to control them.

With the system threats can be mapped. In this report, poaching threat includes different poaching categories such as poaching camps, poaching hides, guns, snares were combined. The maps show that poaching mainly occurs along the edge of HKK where 33 villages are located. In TYE and TYW poaching cases normally occur where villages are located inside and near the sanctuaries also.



Poaching distribution and intensity in HKK-TY in 2012

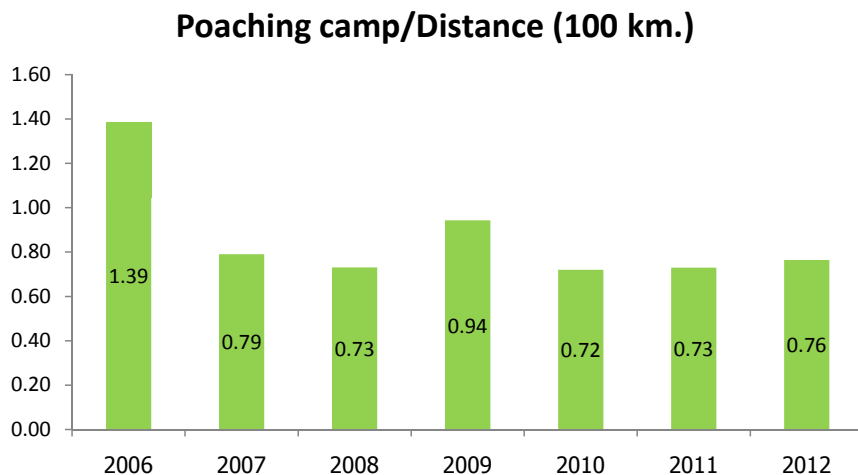


Trend Indicators

With the system in place some key indicators can be tracked easily. The following diagrams show some examples of trend indicators in HKK-TY.

- Poaching camps in HKK-TY were encountered about less than one camp per one hundred kilometers of patrol distance. Most of the camps are quick and easy shelters. This intensity of poacher camps can be much higher if patrol is inefficient.
- Poaching hides have shown a significant reduction in the last seven years in HKK-TY. This is because with high intensity and frequency of patrol efforts, poachers do not have time to build a hide to sit and wait for animals to come out.

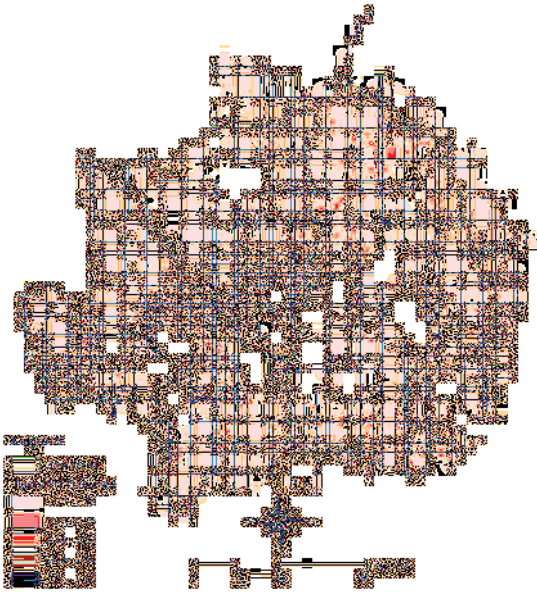
There are other indicators that are not clearly linked with patrol efforts that can be shown over time including numbers of guns, numbers of poacher arrested, numbers of animal carcasses, and many other indicators that we can bring up from the database.



Distribution Abundance of Key Species

In HKK-TY park rangers have knowledge or are trained to be able to identify tracks and signs of wildlife species especially poaching target species including tiger, elephant, banteng, gaur, sambar, muntjac, wild pig.

The examples of distribution maps and abundance of target protected species from 2012 patrol data are shown here.

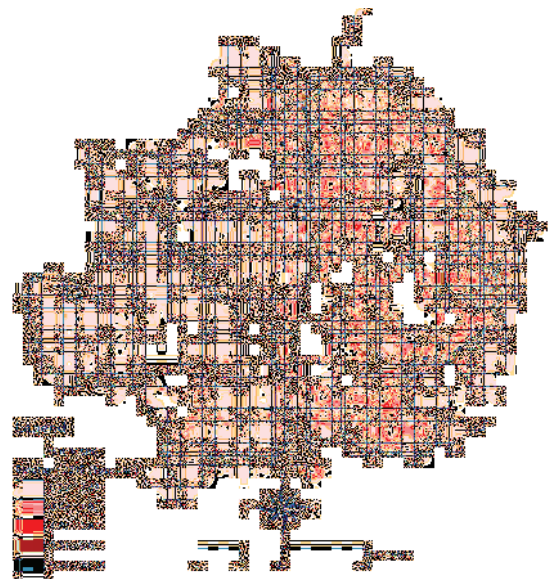


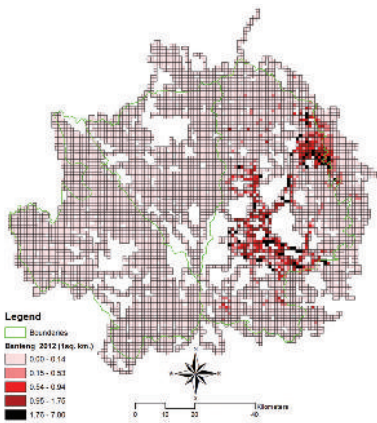
Tiger tracks and signs are found scattered in almost all areas in HKK. In TY East tiger tracks and signs are much lower or none in western part of TYE where Karen villages occupying and using the land. In TY West

tiger tracks and signs were found in many places except the area near Karen villages on the northern part of the sanctuary



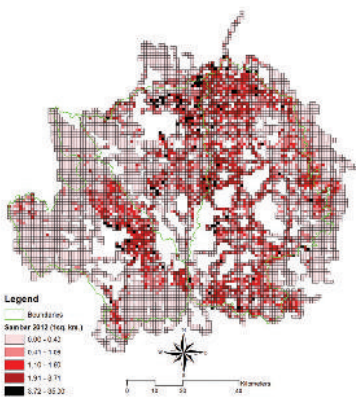
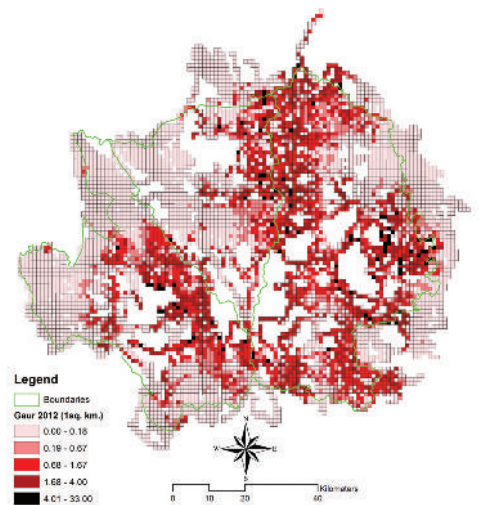
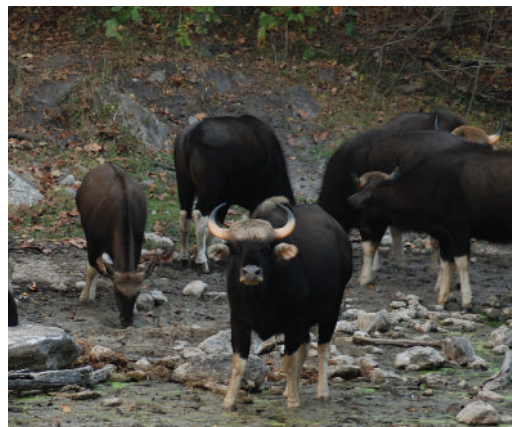
Elephant tracks and signs are mostly restricted inside HKK and eastern part of TY East. The history of human disturbances decades ago has still shown some impacts on the very low or no elephants in western part of TY East and the whole area of TY West.



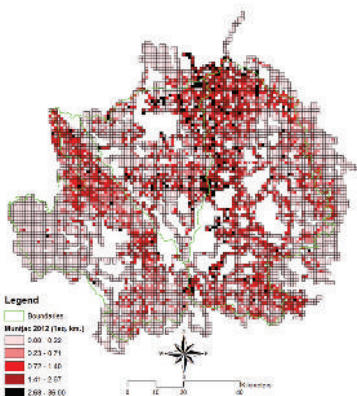


Banteng tracks and signs are strictly found only in HKK with higher frequency in eastern and southern valleys. TY is covered mainly with evergreen forest that is not suitable habitat for banteng.

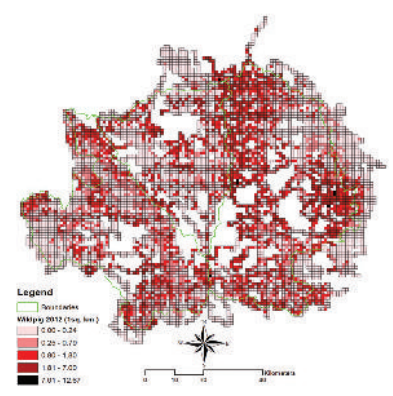
Gaur tracks and signs are found in most of HKK and TY except around the areas where Karen villages occupying the land in western part of TY East and northern part of TY West.

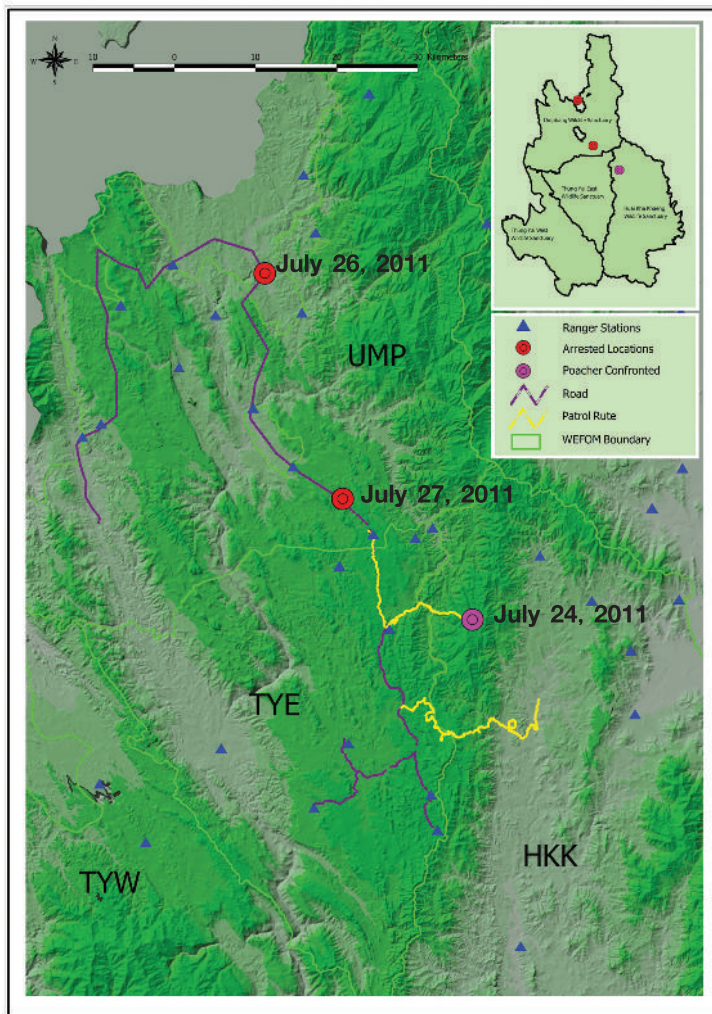


Sambar tracks and signs have almost the same patterns as gaur.



Wild pig and muntjac tracks and signs are found almost all over HKK-TY.





→ July 26, 2011



→ July 27, 2011



→ July 24, 2011



5th QUALIFICATION: SUPPORTED BY STRONG INTELLIGENT NETWORKS

The combination of a strong patrol system supported by good intelligent network and the science of camera-trapped tigers has led to the arrest of high profile case of tiger poaching in HKK-TY. The summary of series of important events is described below.

- Tigers and elephants were poached by poisoning and shooting along the border between HKK and TY East during 2010-2011.
- Department of National Parks, Wildlife and Plant Conservation intensified the hunt for the gangs during 2010-2011 using the Smart patrol system to monitor ranger performance.
- On July 24, 2011, a patrol team ran into 3 poachers in HKK deep near the border with TY East. After gun exchange the poachers slipped away. Park rangers from TY East, HKK, and Umpang tried to hunt them and blocked all the important escape routes.
- On July 26, 2011, after a tip-off from an informer, one Vietnamese poacher was arrested at a resort in Umpang town.
- On July 27, 2011, after a tip-off from an informer, another Hmong poacher was arrested in a hut near TY East.
- The evidence found in one of their cell phones revealed pictures of poachers sitting on a large male tiger and other pictures of wildlife parts. A poacher told the police that he hunted that tiger in Myanmar to avoid Thai law.
- The tiger team including government and WCS later proved that the pictures of tiger in their cell phone matched with a male tiger in the database of tigers in HKK-TY.
- The poacher later admitted that he hunted the tiger in TY East after the police showed him the match of the tiger stripes with a tiger in the database.
- The first court sentenced the Hmong poacher 5 years in jail and the Vietnamese poacher 4 years.



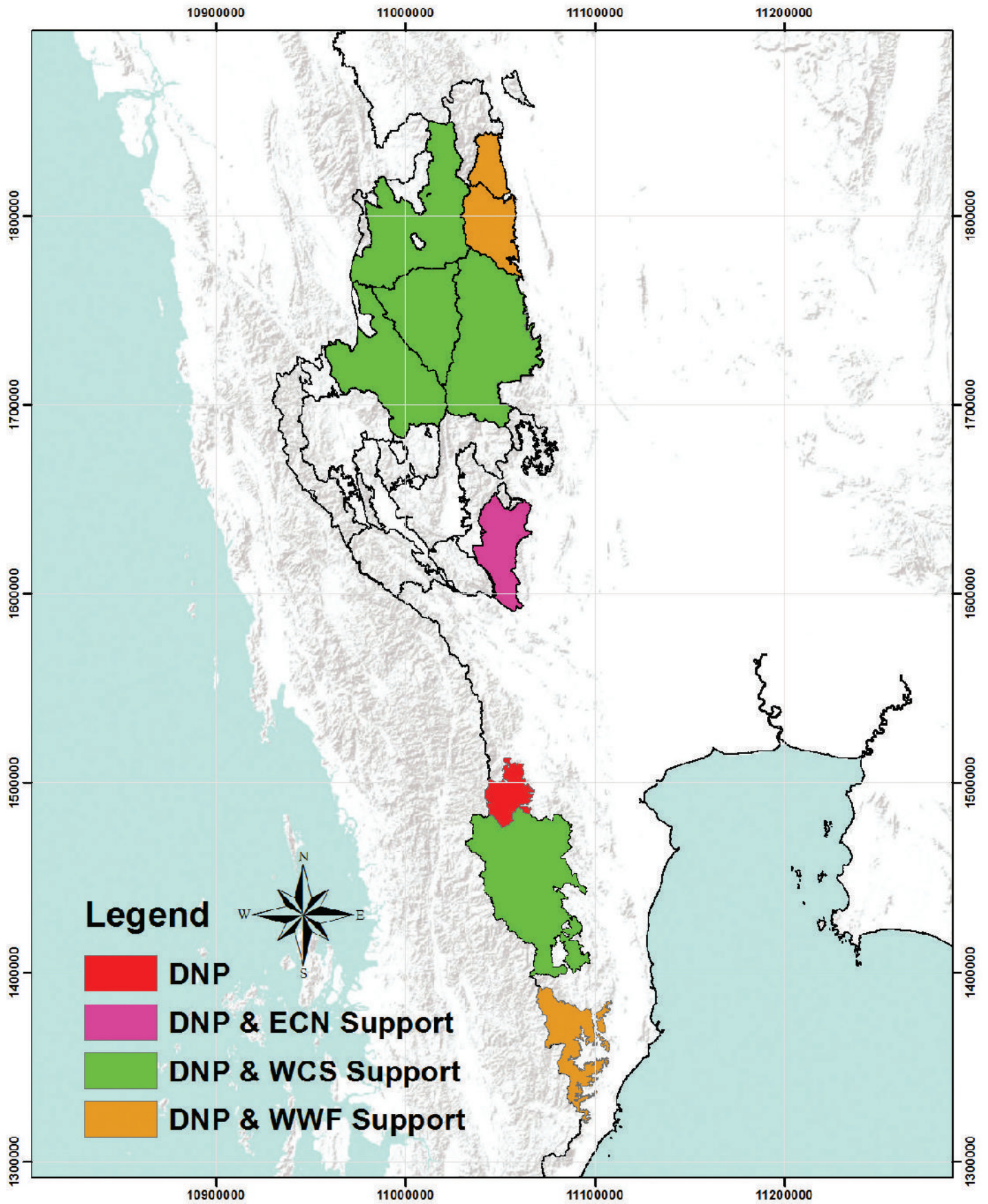
Photo by Kwanchai Waitanyakarn/WCS Thailand

6th QUALIFICATION: LEM DATA FULLY INTEGRATED INTO STRATEGIC PLANNING AND DEPLOYMENT OF PATROL

This is step that makes the Smart patrol system functioning as an imperative tool for protected area management. In HKK-TY the superintendents, assistants, and the heads of the patrol teams have convened in a monthly patrol meeting to discuss about the results of the last month patrols by using patrol maps and photographs as the means. Then they plan on the next month patrols based the up-to-date data produced by MIST together with maps, charts, pictures taken from the patrols. The important information from the patrol database used for presenting and discussing including all the information shown in this report. After many years of running the monthly patrol meetings park rangers have been quite confident in their performance and their involvement in protection and management of the area. HKK-TY superintendents now have up-to-date and more systematic information to make decision on management and protection of their areas.



Photo by Kwanchai Waitanyakarn/WCS Thailand



Areas with Smart patrol system running

EXPANSION OF SMART PATROL SYSTEM IN THAILAND

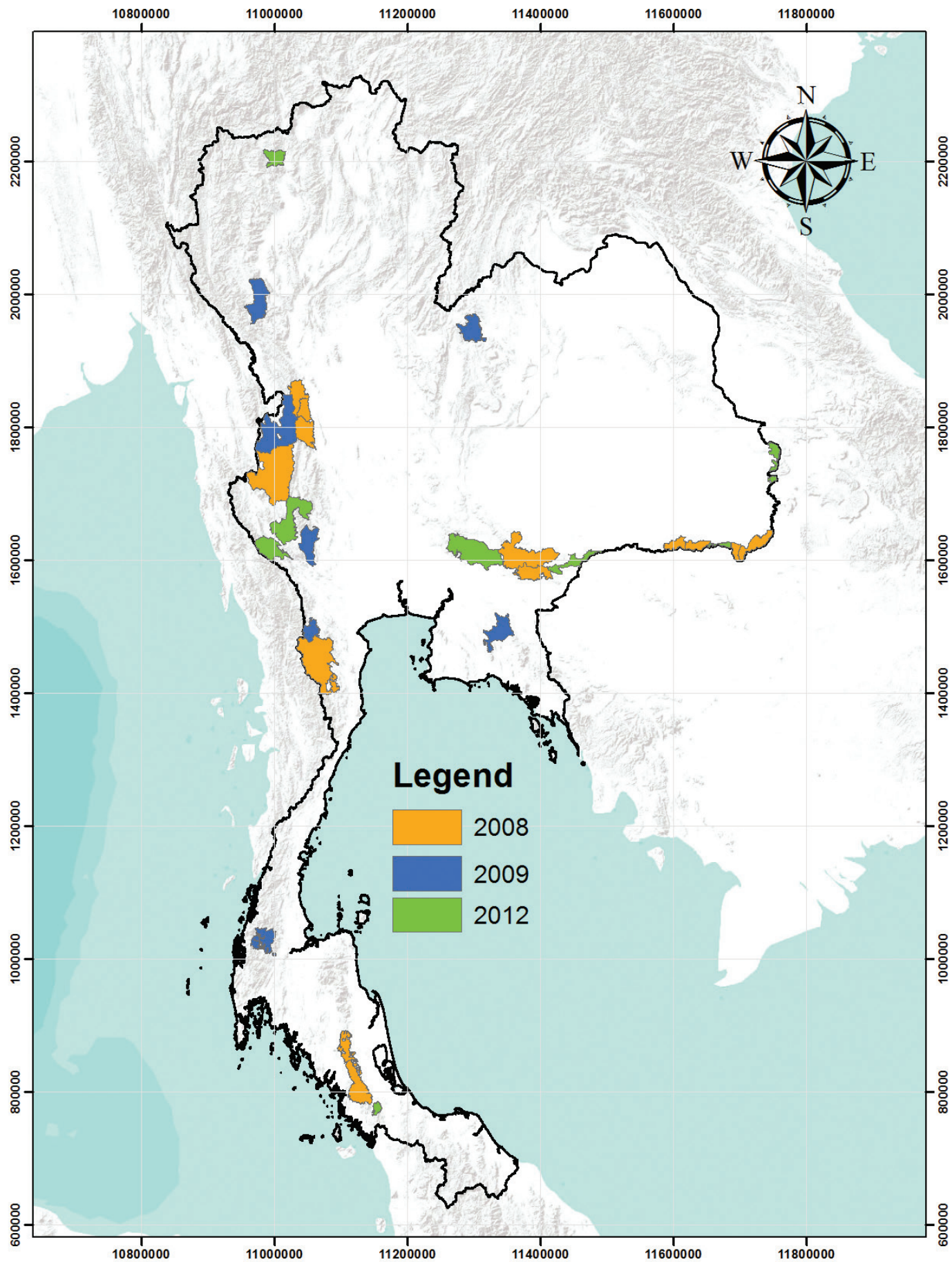
EXPANSION IN WEFCOM & TENASSERIM

Expansion of the Smart patrol system started in HKK with the keen government officers under support from WCS in 2006. After that the system has expanded into Thung Yai Naresuan East, Thung Yai Naresuan West, and Umpang Wildlife Sanctuaries under partially support by WCS. WWF has worked closely with the government to help support Mae Wong and Klong Lan National Parks. The Elephant Conservation Network (ECN) has also joined to support Salakpra Wildlife Sanctuary.

For the rest of protected areas in Tenasserim Landscape, WCS has worked closely with Kaeng Krachan National Park for many years to sustain the existing protection quality using MIST. WWF has supported Kui Buri National park for some years. The superintendent of Mae Num Pachee Wildlife Sanctuary has tried to use MIST in his area.



Photo by Khoa Nang Rum Wildlife Research Station /WWF



Areas trained under Smart patrol system

EXPANSION IN OTHER PROTECTED AREAS

(GOVERNMENT INVESTMENT & TRAINING)

The government by the Department of National Parks, Wildlife and Plant Conservation has set aside budget to train park rangers from different areas to use the Smart patrol system. The following are the summary of the protected areas and number of park rangers trained under the system.

2008 Training Courses: 8 National Parks and 5 Wildlife Sanctuaries (140 rangers)

Kaeng Krachan NP, Klong Wang Chaw NP, Mae Wong NP, Klong Lan NP, Tap Lan NP, Pang Si Da NP, Thung Yai Naresuan-West WS, Phu Chong Na Yoi NP, Pha Nom Dong Rak WS, Yod Dome WS, Huai Sa La WS, Khao Pu - Khao Ya NP, Khao Ban That WS

2009 Training Courses: 8 Wildlife Sanctuaries (240 rangers)

Khao Ang-Rue Nai WS, Khao Ban That WS, Klong Sang WS, Mae Nam Pha-she WS, Om-Koi WS, Phu Luang WS, Umpang WS, Sa-lak Pra WS

2012 Training Courses: 9 National Parks and 7 Wildlife Sanctuaries (231 rangers)

Pang Si Da NP, Ta Phraya NP, Khuean Srinagarindra NP, Sai Yok NP, Yod Dome WS, Pha Nom Dong Rak WS, Huai Sa La WS, Kaeng Tana NP, Phu Chong Na Yoi NP, Khao Phra Wihan NP, Pha Taem NP, Tone Nga Chang WS, Khao Ban that WS, Om-Koi WS, Chiang Dow WS, Khao Yai NP





Photo by Kwanchai Waitanyekarn, S. Thailand

INTRODUCTION OF SMART



In 2012 many organizations who have worked on the improvement of protection and management of protected areas of global importance have come together to develop a more advance patrol database and named it SMART. In Thailand SMART is being tested in some key sites with MIST running intensively. The benefits of SMART development are presented in the report for managers to understand this significant development.





What is SMART?

Developed by global conservation organizations in close collaboration with protected area authorities and other key stakeholders, the Spatial Monitoring and Reporting Tool (SMART) represents a major step forward for improved site-based conservation. SMART's software and training materials both extend and simplify existing technologies for monitoring efforts to tackle poaching and other illegal activities, making those technologies more effective, efficient and user-friendly.

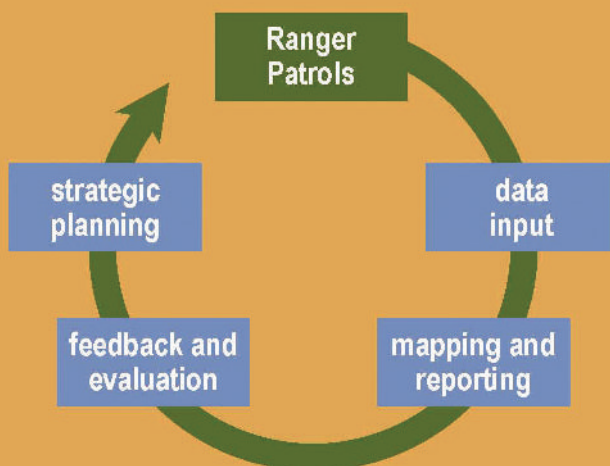




Why SMART?

SMART has been developed in response to the recognition that traditional tools, technologies and resources are not stemming the illegal killing and trading of endangered species and the resulting loss of threatened and highly valued biodiversity, such as tigers, rhinos, elephants, great apes and their habitats. There are a number of reasons why our best efforts to date have yet to meet this challenge. A critical issue is the growing gap between the sophistication of those involved in the illegal capture and trade in wildlife and the number, skill levels and motivation of the personnel committed to enforcing antipoaching laws.

SMART was designed to help bridge this gap. Its combination of software and training materials provides protected area authorities and community groups with the ability to empower staff, boost motivation, increase efficiency, and promote credible and transparent monitoring of the effectiveness of antipoaching efforts. SMART can do this because it is more adaptive and intuitive to use than other monitoring technologies now in use, and because it has more advanced analytical and reporting functions.



More specifically

- SMART provides timely and accurate information on where, how and by whom poaching, illegal logging and other direct threats to biodiversity are occurring. It allows for the collection of up-to-date field and intelligence data, and enables rapid feedback and communication between protected area managers and frontline enforcement staff. It quantitatively measures the impact of anti-poaching efforts in order to judge which tactics yield the best results and which ones need to be modified, thereby greatly improving the evaluation and strategic planning of enforcement operations.
- SMART introduces accountability into anti-poaching efforts. It gives government agencies, managers and donors the ability to monitor and assess the cost-effectiveness of law enforcement efforts. Park and community reserve managers can use it as a tool to measure job performance and help motivate field staff.
- SMART is driven by the conservation community, building on existing field-based experience and expertise and ensuring that SMART responds directly to the needs of field managers.
- SMART is open-source, nonproprietary and free to obtain. It is supported by a long-term business plan, which will enable future development and modification to meet the evolving needs of field-based users. It is easy to use and can be translated into the languages of its end users.
- SMART is fully compatible with existing and complementary tools such as CyberTracker and MIST, and has been created for integration with mobile data-gathering platforms.



After two years of intensive research, development and field testing, the first version of SMART—with both the downloadable software and web-supported training materials—is available.

Making SMART Even Smarter with Your Help

The current members of the SMART partnership all share organizational missions to conserve biodiversity, protect endangered species, and reconcile the needs of people and nature in a way that ensures the continued prosperity of both. In that spirit, we intend to make the products of our partnership freely available to the entire conservation community. SMART was not developed to give any one organization, or group of organizations, a competitive edge over others.

In that same spirit, the partnership invites other conservation groups and donors to join. Although SMART's initial focus is on law enforcement, we envisage an ongoing and expanding collaboration by a diverse community of users to develop a suite of software tools that can be used to capture, manage, and analyze various kinds of spatial-temporal data critical to the effective management and monitoring of conservation areas.

We've got a planet to save—and we all face enormous challenges in doing it. It's time we got smart.

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LIST OF SMART PATROL DEVELOPMENT TEAM IN WEFCON

DEPARTMENT OF NATIONAL PARKS, WILDLIFE AND PLANT CONSERVATION

Role: The sole authority for protection and research on tigers and their habitat in national parks and wildlife sanctuaries in Thailand.

Key persons:

Dr. Theerapat Prayurasiddhi

Mr. Chatchawan Pisdamkham

Mr. Soontorn Chaiwatana

Dr. Saksit Simcharoen

Mr. Somphot Duangchantrasiri

Ms. Budsabong Kanchanasaka

Mr. Somphoch Maneerat

Mr. Apicha Yoosomboon

Ms. Weraya O-chakull

Mr. Mongkol Kamsook

Mr. Chaiwatt Limlikhitaksorn

Mr. Sompong Thongsikhem

Mr. Thawatchai Phetcharaburanin

Mr. Pisit Piyasomboon

Mr. Apiwat Boonserm

Mr. Supalerk Klanprasert

WILDLIFE CONSERVATION SOCIETY

Role: Support DNP on technology and additional expense to run the Smart patrol system and tiger population monitoring system for HKK-TY World Heritage Site. WCS also supports DNP on cost and technology to run the occupancy monitoring at the landscape scale of WEFCON.

Key persons:

Dr. Anak Pattanavibool

Ms. Mayuree Umponjan

Ms. Jutamas Tifong

Mr. Sitthichai Jinamoy

Mr. Kamon Faengbubpha

Ms. Ratchanee Chokcharoen

FACULTY OF FORESTRY, KASETSART UNIVERSITY

Role: Train all the wildlife and protected area managers for DNP especially all the key persons in DNP, WCS, and WWF working on tiger conservation. KUFF also supports the technology, student volunteers, and future generations of tiger and wildlife conservation scientists and managers.

Key persons:

Dr. Anak Pattanavibool

Dr. Naris Bhumpakphan

Dr. Vijak Chimchome

Dr. Ronglarp Sukmasuang

Dr. Yongyut Trisurat

Dr. Prateep Duengkae

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Khao Nang Rum Wildlife Research Station

World Wildlife Fund (WWF)

Seub Nakhasathien Foundation

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