

Asian Elephant Conservation Act

Activities Report for the Wildlife Without Borders - Species Programs
Ten Year Report FY 2002 - FY 2011



Working with People to Conserve Nature

To help ensure conservation of the world's diverse species, the U.S. Fish and Wildlife Service's (USFWS), **Wildlife Without Borders** program builds the capacity of local people to value and conserve irreplaceable wildlife and habitats around the globe. In recognition of the unprecedented threats to wildlife of global significance, our species programs have helped save some of the world's most iconic and endangered animals in the habitats on which they and other species depend on.

A robust coalition of zoos and other captive elephant holders in the United States pursued federal funding for the conservation of Asian elephants in their native habitat. On behalf of the American people, the U.S. Congress passed the Asian Elephant Conservation Act in 1997. Under this Act, the Asian Elephant Conservation Fund (AsECF) was created to assist in the conservation of Asian elephants by supporting and providing financial resources for conservation programs of nations within the range of Asian elephants and projects of persons with demonstrated expertise in the conservation of Asian elephants. The Act has enabled federal dollars to leverage private sector support thereby increasing the amount of conservation dollars available to conserve Asian elephants in the wild.

The legislation was enacted to ensure the long-term survival of these endangered species by assisting in the conservation of Asian elephants across the current 13 range states: Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos PDR, Malaysia, Myanmar (Burma), Nepal, Sri Lanka, Thailand, and Vietnam. USFWS has been given the significant task of managing and administering the AsECF.

This report highlights the USFWS' Wildlife Without Borders Asian Elephant Conservation Fund (AsECF) supported project activities, encompassing fiscal years FY 2002 – FY 2011. The following pages provide an overview of the many successes of the AsECF as well as the remaining challenges to Asian elephant conservation. The report includes project highlights to demonstrate how USFWS and its partners are making a lasting impact on Asian elephant conservation.

By protecting forest and grassland habitats and minimizing human-elephant conflict, building capacity and working closely with local communities and governments, USFWS is implementing effective conservation strategies to protect Asian elephants in the wild.



Herb Raffaele
Chief, Division of International
Conservation
U.S. Fish & Wildlife Service



Above: Farmers and conservation community in Bhutan. Credit: USFWS

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Above: An elephant walks through the forest in Kaziranga National Park, India.
Credit: Udayan Borthakur/AARANYAK

Below: Figure 1: Range-wide Mapping Workshop for Asian Elephants (*Elephas maximus*) Cambodia, October 2008.
Source: Wildlife Conservation Society

Status of Asian Elephants Today

Asian elephants (*Elephas maximus*) once roamed across Asia from Persia through China, but today their range is highly restricted and fragmented. Approximately 90% of Asian elephants' historical range has been lost and only 29% of the remaining Asian elephant range is within protected areas defined by the International Union for Conservation of Nature (IUCN) (Figure 1). Asian elephants currently occur in 13 Asian countries: Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos PDR, Malaysia, Myanmar (Burma), Nepal, Sri Lanka, Thailand, and Vietnam. It is widely accepted and often quoted that there

are 40,000 Asian elephants across its range countries, although this number has not been verified for accuracy due to the lack of capacity and technology available to estimate populations in many Asian elephant range countries. The greatest number of Asian elephants is found in India (approximately 26,000 individuals) while the lowest numbers are found in Vietnam (approximately 10-30 individuals) (Table 1).

Three subspecies of Asian elephants are currently recognized: *Elephas maximus indicus* on the Asian mainland, *Elephas maximus maximus* in Sri Lanka, and *Elephas maximus sumatranus* in Sumatra, Indonesia.



Asian elephants in Borneo, *Elephas maximus borneensis*, have been recently defined as a fourth subspecies. This group of Asian elephants was most likely introduced to Borneo via the Philippines.

Asian elephants live in a wide variety of habitats, including savanna, scrub forest, secondary forest, and closed-canopy forest. Grasses typically account for more than 50 percent of an Asian elephant's diet; grassland/forest landscapes are considered optimal habitat. Asian elephants are a key part of the ecosystem in Asia as they act as mechanisms of seed dispersal, plant succession, and soil nutrient cycling.

Presently, an estimated 16,000 Asian elephants are in captivity across the 13 range countries. Captive elephants in Asia are housed in temples, rural elephant camps, or zoos. Historically, captive elephants were used as work animals for harvesting timber, clearing forests, and cultivating land for agriculture. In ancient times, Asian elephants were also used frequently in warfare, especially by Alexander the Great and the rulers of India and the Khmer Empire. Today, very few countries use captive elephants as beasts of burden. Regrettably, captive elephants in many instances face husbandry and care issues, disease, and exploitation.

It is not uncommon, however, for elephants to be used by wildlife and forest departments and individuals to carry out tasks such as patrolling, law enforcement, and transporting tourists.



COUNTRY	2005 ESTIMATE	2008-2011 ESTIMATE
Bangladesh	196-227	253-332
Bhutan	400-600	228-348
Malaysia (Sabah)	1,100-1,600	1,500-2,000
Myanmar (Burma)	3,000-4,000	1,231-1,492*
Cambodia	250-600	445*
China	200-250	117
India	23,900-32,900	26,000-30,000
Indonesia (Kalimantan)	N/A	60-100
Indonesia (Sumatra)	1,180-1,557	2,400-2,800
Laos	780-1,200	282
Malaysia (Peninsular)	766	1,250-1,466
Nepal	100-170	304-350
Sri Lanka	2,500 (1993 estimate)	5,879
Thailand	3,000-3,700	3,000-3,700
Vietnam	79-94	10-30
TOTAL	50,864**	48,472**
*some areas unknown		
**approximate		

Asian elephants are revered in Hinduism, the dominant religion of the Indian subcontinent, as "Lord Ganesh." This iconic position has been very important for the continued survival of Asian elephants in the wild. However, this godly stature does not restrain poachers from killing elephants for their ivory tusks which command a lucrative price on the black market.

Historically humans co-existed with Asian elephants in South and Southeast Asia due to their religious and cultural importance. However, expanding human populations have caused intense competition for natural resources.

Above: Table 1: Estimated elephant populations in the thirteen range countries.

Below left: An ancient Asian elephant sculpture on a temple wall in Sri Lanka.

Below right: A statue of Lord Ganesh in Sri Lanka.
Credit (both images): Centre for Conservation and Research



Conservation of Elephants in a Human-Dominated Landscape

Top right: Landscape in Assam, India, 1999.

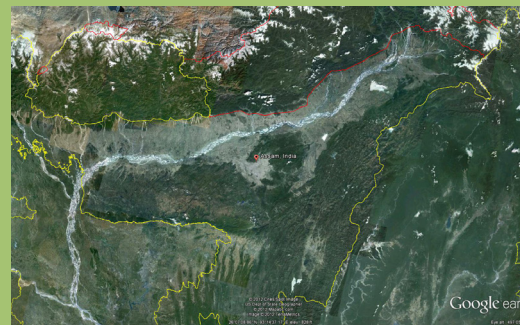
Bottom right: Landscape in Assam, India, 2012 demonstrating human altered landscape.
(Source: Google Earth)

Above: An illegal village in a state forest in Sumatra.
Credit: Frankfurt Zoological Society

Growing human populations, rapidly expanding economies, and competition for natural resources have a direct impact on wildlife and their habitats worldwide. Asian elephants live in one of the fastest growing areas of the world in terms of human population and economic development. In less than 200 years, the global human population has grown from 1 billion to nearly 7.4 billion. In Asian elephant range countries alone, the human population is more than 3 billion and growing rapidly. While the population of Asian elephants in these countries has dramatically declined, human populations have more than doubled. The forests of Asian elephant range countries have been dramatically altered by such rapid growth, particularly during the 20th century. There are numerous consequences to such exponential growth such as the rapid consumption of natural resources.

After independence from colonial powers, the primary emphasis of Asian elephant range countries has been economic growth with few resources dedicated to natural resource conservation. The few protected areas that do exist such as national parks or sanctuaries, are often fragmented and/or occupied by humans.

Encroachment by humans into protected areas, as illustrated by the figures on this page, is theoretically against the law but due to lack of enforcement, people are rarely asked to move out of these areas. This encroachment brings elephants and people in closer contact, causing numerous conflicts which are often lethal for both.



In order to prevent extinction of the species a landscape approach to conservation is important. The Asian Elephant Conservation Fund (AsECF) has invested in strategic habitat conservation across landscapes, working with governments, non-governmental organizations (NGOs), and communities. AsECF supports habitat restoration especially where these habitats provide corridors and connectivity between fragmented landscapes. This approach has been important to protect existing forests and provide new forested lands from a climate change perspective. Asian forests are some of the most important terrestrial carbon sinks on Earth. The landscapes AsECF helps to protect are also very important for tigers, rhinoceroses, and apes in Asia.

“Support from the USFWS to the Elephant Research and Conservation Initiative has been extremely crucial in the conservation of the Asian Elephants in Assam. The grants have resulted in a demonstrable success of building capacity of both researchers and frontline staff.”
-Aaranyak, India

Threats

Deforestation



Left: Logged forest in Sabah, Malaysia.
Credit: World Wildlife Fund

Asian elephants require large areas of land to meet their ecological needs. An adult Asian elephant consumes more than 400 pounds of vegetation and 52 gallons of water every day and needs a “living space” or range, of at least 80 square miles. While protected areas provide for an elephant’s needs to some extent, these areas are often not sufficient to support elephants year round. Elephants typically live in family groups and only mature bulls are frequently solitary.

In the absence of contiguous habitat, terrestrial animals, such as Asian elephants, need biological corridors to get from one “habitat patch” to the next. Without the ability to move between fragmented areas of habitat, Asian elephant populations will suffer the consequences of genetic isolation and inbreeding. Currently, there are numerous threats to the viability of biological corridors, including fences, roads, buildings, commercial and subsistence crop fields, extractive industries such as logging and mining, and railroads.

Asian elephants move extensively around habitats and ranges seeking water, food, and essential minerals, which vary by season. Considering mature elephant males can weigh as much as 11,000 pounds, it is evident that Asian elephants require substantial natural resources to survive. The destruction of forests, the expansion of agriculture, and the encroachment of human development pose the greatest threats to the survival of Asia’s wild elephants.



Left: With the expansion of roadways, forests can be cleared and logs transported faster and more efficiently than ever before, Sumatra, Indonesia.
Credit: Fauna and Flora International

Below: Elephant tracks through rice paddy fields in Assam, India.
Credit: Aaranyak

Threats

Local Communities & Human-Elephant Conflict



Top left: The remnants of homes destroyed by wild elephants in Assam, India.
Credit: Aaranyak

Top right: An elephant shot dead by a farmer after the elephant destroyed the farmer's house, Sri Lanka.
Credit: Centre for Conservation and Research



Local communities living close to forests and protected areas often rely heavily on products from those areas. Protected areas are often the last places where the resources that local communities have relied on for generations are still available. Protected areas are also a source of food and water for many people. This harvest of natural resources may be legal or illegal.

Another utilization of protected areas includes people allowing their domestic livestock to graze in these areas which can severely limit the availability of food for wildlife, such as Asian elephants. This practice also increases the risk of disease transmission from livestock to elephants. Since many local communities are dependent on the forest for natural products, communities may require more tangible incentives to conserve biodiversity and limit the use of these resources.



Above: An elephant approaches a makeshift fence built to keep elephants out of the village, Sri Lanka.
Credit: Centre for Conservation and Research

“Receiving grants from the AsECF has enabled the International Elephant Foundation to develop forest monitoring patrols by trained staff and camp elephants. Ensuring forest and wildlife protection requires ongoing financial support. The AsECF funding has been crucial to maintain forested habitat for Asian elephants in Sumatra, Indonesia.”

-International Elephant Foundation, USA

Threats

Crop Raiding

Forests are diminishing every day, making Asian elephant conservation increasingly difficult as elephants are now in closer contact with humans. Human-elephant conflict is a very serious and complex issue in every range country. When sizeable elephant ranges are not available, and elephants' former habitat is converted to highly-palatable crop fields, elephants are attracted to commercial plantations and private fields of rice, cassava, bananas, oil palm, rubber, tea, and coffee. Frequently, this alternative source of food for elephants is the main source of income for local villagers, who have put in hard work to plant and maintain the crops. Nightly raids by hungry elephants, together with frenzied attempts by farmers to chase the animals away, often results in tragedy. For example, in Sri Lanka approximately 120 elephants are killed each year by villagers, and approximately 60 people are killed each year by elephants in connection with crop raids.

In many cases, villagers have poisoned or electrocuted elephants due to the continuous crop raiding. Elephants are large and powerful mammals. Fences and other deterrents are not always effective in keeping elephants away. Usually, the elephants will either push down the fence or the villagers do not maintain the fence very well. There have been successes in mitigating human-elephant conflict, but it remains a challenging problem. Human-elephant conflict is a serious issue that must be addressed if Asian elephants are to survive in the wild.

“Addressing elephant health is a key factor for successful conservation; the AsECF funded projects administered by Asian Elephant Support have enhanced the understanding and management of Asian elephant health – both at the individual and population level. With important support from the AsECF, elephant health in Asia is improving”.

-Vesswic, Indonesia



Above: A young male elephant dead after being electrocuted by an electric fence in Thailand.
Credit: Elephant Conservation Network

Below left: A herd of elephants nears a rural village.

Below right: An injured and angry villager stands in front of the remnants of his house, damaged by elephants.
Credit (both images): Greenguard



Threats

Poaching

Poaching – the illegal killing of elephants for ivory, meat, skin, teeth, feet and bones – poses a serious threat to the survival of Asian elephants. Among Asian elephants, only males have large tusks. Asian elephant ivory is very desirable for figurines and other crafts and centuries of targeting male elephants have left some elephant populations severely unbalanced with 50 females to every “tusker”. In parts of India, the poaching of tuskers is shifting the male Asian elephant population towards the survival of tusk-less males known as “mukhnas”.

Invasive Species

Invasive plant species, such as the weed *Lantana camara*, also threaten the survival of Asian elephants, as well as other herbivores, by displacing better foraging plants. Invasive plant species spread quickly over the landscape and are the result of intentional or unintentional introduction by humans or livestock. Once established, it is very difficult to completely rid the landscape of these species. Many protected area managers in Asian elephant range countries lack capacity to deal with these species, by means of physical removal or chemical destruction.



Right: The invasive plant species, *Lantana camara*, in Mudumalai, India.
Credit: USFWS

The Asian Elephant Conservation Fund is committed to long-term conservation solutions.

The Asian Elephant Conservation Fund of the USFWS has provided support for conservation projects in the 13 Asian elephant range countries since 1997. The Asian Elephant Conservation Fund recognizes the lack of accurate population estimates of Asian elephants in the wild, and has a goal of obtaining accurate and consistent population estimates. However, at the Asian Elephant Range-Wide Priority Setting Workshop in 2008, participants agreed that conservation of Asian elephants cannot wait. There are obvious Asian elephant conservation issues, such as habitat loss, poaching, and human-elephant conflict that require immediate attention and long-term planning. Conservation is a continuing commitment. The Asian Elephant Conservation Fund is committed to understanding and reducing threats, as well as the study of Asian elephants' ecological needs to enable range countries to better protect their natural resources for future generations.



Above: A peaceful moment in a Sri Lankan wetland.
Credit: Centre for Conservation and Research

Special Threat: Palm Oil

Palm oil is the second-most produced and internationally traded edible oil in the world and is grown mainly in Malaysia and Indonesia. Palm oil is a main ingredient in a wide range of household products, such as shampoo, cosmetics, potato chips, and frozen foods, as well as in products such as biodiesel, which are expected to increase dramatically in the near future.

The expansion of palm oil plantations poses a very serious risk to the survival of Asian elephants in the wild as well as to local people, as palm oil plantations frequently displace local subsistence agricultural communities. Habitat loss, the greatest threat to the survival of Asian elephants in Indonesia and Malaysia, is occurring at an incredibly fast rate as a result of palm oil plantations. In addition, if Asian elephants wander onto palm oil plantations, they are often poisoned or killed. All too frequently, elephants are removed from the forest under the guise of human-elephant conflict, where palm oil companies intend to cut down the forest to make way for palm oil plantations. This is causing large scale devastation of elephant habitat and populations with respect to their ecology, genetics, and behaviors. According to the U.S. Department of Agriculture (USDA), palm oil plantations in Indonesia have doubled since the year 2000.



Left Bottom: A herd of elephants in a palm oil plantation, Sumatra, Indonesia.
Credit: Frankfurt Zoological Society

In 2012, it was estimated that palm oil plantations covered 20.3 millions acres of Indonesian land (Sumatra, Kalimantan and Sulawesi). Malaysia and Indonesia are planning even further expansion of palm oil plantations to take advantage of growing profitability. According to the USDA, the Indonesian Palm Oil Commission reported the Indonesian government expects to reach a target of producing 28 million tons of palm oil by the year 2015, which would require 18.3 million acres of land to be planted for palm oil in Indonesia. The development of palm oil plantations is one of the leading causes of rainforest clearance in Southeast Asia and palm oil grows best in lowland evergreen tropical rainforests, which support the highest biodiversity of any terrestrial ecosystem. Plantation companies can offset start-up costs with huge profits by clearing forested land and selling timber. Therefore, there is a strong financial incentive to cut down virgin forest as opposed to using previously cultivated land, which would be a more environmentally sensitive approach to development.

The loss of rainforest will quickly and inevitably result in the local extinction of many unique mammals, such as the Asian elephant, Sumatran tiger, Bornean and Sumatran orangutan, and Sumatran rhinoceros. Palm oil plantations disrupt wildlife ecology by hindering migration and blocking crucial travel corridors. Increased engagement between the conservation community and the palm oil industry is necessary to develop a more sustainable product that benefits both conservation and business.

“The financial support from the USFWS-AsECF to Vesswic has been crucial for our organization to successfully conduct our elephant conservation program in Sumatra. Without the funding support from the USFWS-AsECF, Vesswic would not have been able to effectively conduct many of these activities.”

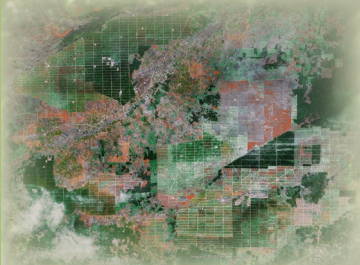
-Vesswic, Indonesia



Above: Palm oil plantations, Sumatra, Indonesia.
Credit: Wildlife Conservation Society



Above: New palm oil plantations replace forest, Sumatra, Indonesia.
Credit: Frankfurt Zoological Society



Above: An aerial view of geometric palm oil plantations, Sumatra, Indonesia.
Source: Google Earth

How It Works: Asian Elephant Conservation Act

Congressional Mandate and Program Mission

The Asian Elephant Conservation Act (Public Law 105-96-NOV. 19, 1997) states the following: To assist in the conservation of Asian elephants by supporting and providing financial resources for the conservation programs of nations within the range of Asian elephants and projects of persons with demonstrated expertise in the conservation of Asian elephants.

Goals

1. To perpetuate healthy populations of Asian elephants.
2. To assist in the conservation and protection of Asian elephants by supporting the conservation programs of Asian elephant range states and the Convention on the International Trade of Endangered Species of Flora and Fauna (CITES) Secretariat.
3. To provide financial resources for those programs.

Objectives

The overall goal will be accomplished through support of the following objectives:

1. In partnership with national, regional, and local conservationists and communities, address human-elephant conflict that arises from competition of the same habitat through effective and sustainable mitigation and outreach strategies, including small scale community support programs.



Credit: HUTAN

Asian elephants are listed as Endangered by the International Union for the Conservation of Nature and the U.S. Endangered Species list.

2. Foster a conservation ethic in local those living in close proximity to Asian elephants, in order to secure long-term sustainable conservation methods for elephant management as well as their forest habitat.

3. Provide technical support for on-the-ground conservation projects funded by the Asian Elephant Conservation Fund to ensure local implementers conduct the most scientifically sound and effective elephant conservation programs.

4. Build capacity of park rangers and law enforcement personnel to enforce compliance with applicable treaties and laws that prohibit or regulate the taking or trade of Asian elephants and their parts, specifically ivory, through support of permanent anti-poaching camps, patrols, and alternative livelihoods.

5. Build the capacity of communities and law enforcement personnel to patrol the forest for illegal logging activities and encourage a mindset of protecting the forest for future generations.

6. Support the introduction, development and implementation of standardized surveys and monitoring techniques of Asian elephant populations across the range countries to monitor long term trends of populations and movements so that the most effective conservation strategies are implemented.

7. Provide support for scientific studies including genetics, telemetry and tagging to examine distinct Asian elephant range populations within each range country as well as studies and management plans regarding disease among populations.

8. Support proper management of captive elephants engaged in conservation of wild elephants such as patrolling a forest and assisting in human elephant conflict mitigation efforts.

9. Build the capacity of veterinarians working in range countries to provide the best care appropriate for captive Asian elephants that aid in conservation of wild elephants as well as provide the best care for wild elephants when possible.

10. Support cooperation and capacity building of regional and international bodies through workshops, meetings, publications, and other forms of communication to further the knowledge and inspire the sharing of ideas among conservationists as well as providing valuable skills including proposal writing, fundraising, grant management, and computer skills.

11. Partner with governmental forestry and natural resource institutions to develop their capacity and motivation to engage with and create Asian elephant conservation programs within their

respective countries, as well as support countries' efforts to work together for transboundary elephant conservation issues.

12. Support national and regional outreach programs tailored to specific local, national, and regional issues to increase awareness and support with the purpose of inspiring action for Asian elephant conservation.

13. Support emerging Asian elephant projects and programs in developing countries, with special attention paid to community development dimensions and requirements for successful and sustainable on-the-ground conservation.

14. Identify and nurture potential conservation leaders within countries and regions through training opportunities and project support.

15. Continually assess and prioritize funding support to focus on the most important global and regionally significant Asian elephant populations and those populations most at risk.

16. Support development and expansion of community-based forestry projects, including improving the yield of crops in order to limit forest-to-agriculture conversion, linking conservation programs with issues that affect local and regional populations.



Above: The tip of an Asian elephant's trunk in Bengkulu, Sumatra.
Credit: Frankfurt Zoological Society

Left: Male elephants spar in Aceh, Sumatra.
Credit: Fendra Tryshanie

Below: A lone elephant stands in Uda Walawe National Park, Sri Lanka.
Credit: Centre for Conservation and Research

Right: A mother and calf in Sabah, Borneo, Malaysia.
Credit: HUTAN

How is the AsECF used to strategically address and maximize conservation impact?

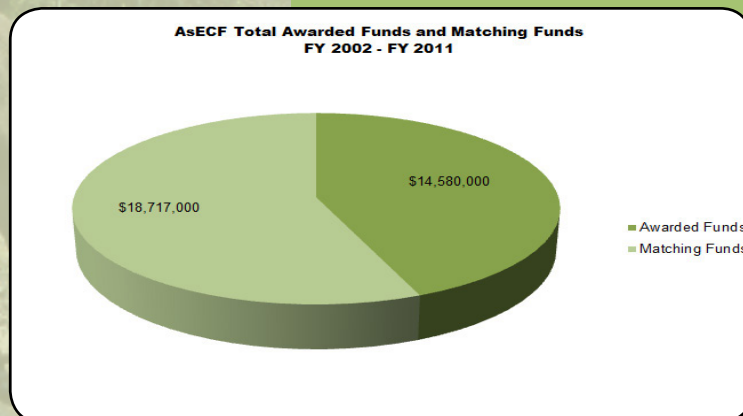
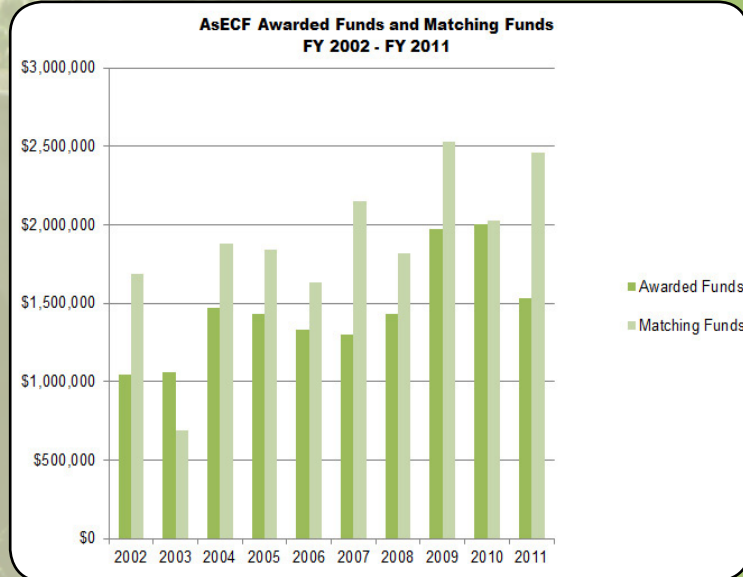
Asian elephants in the wild are endangered across all 13 range countries. The degree of threat depends on the area, habitat, and human population density. In addition, elephant survival is affected either positively or negatively by their status in local culture. For example, elephants are highly revered in India due to their importance in Hinduism.



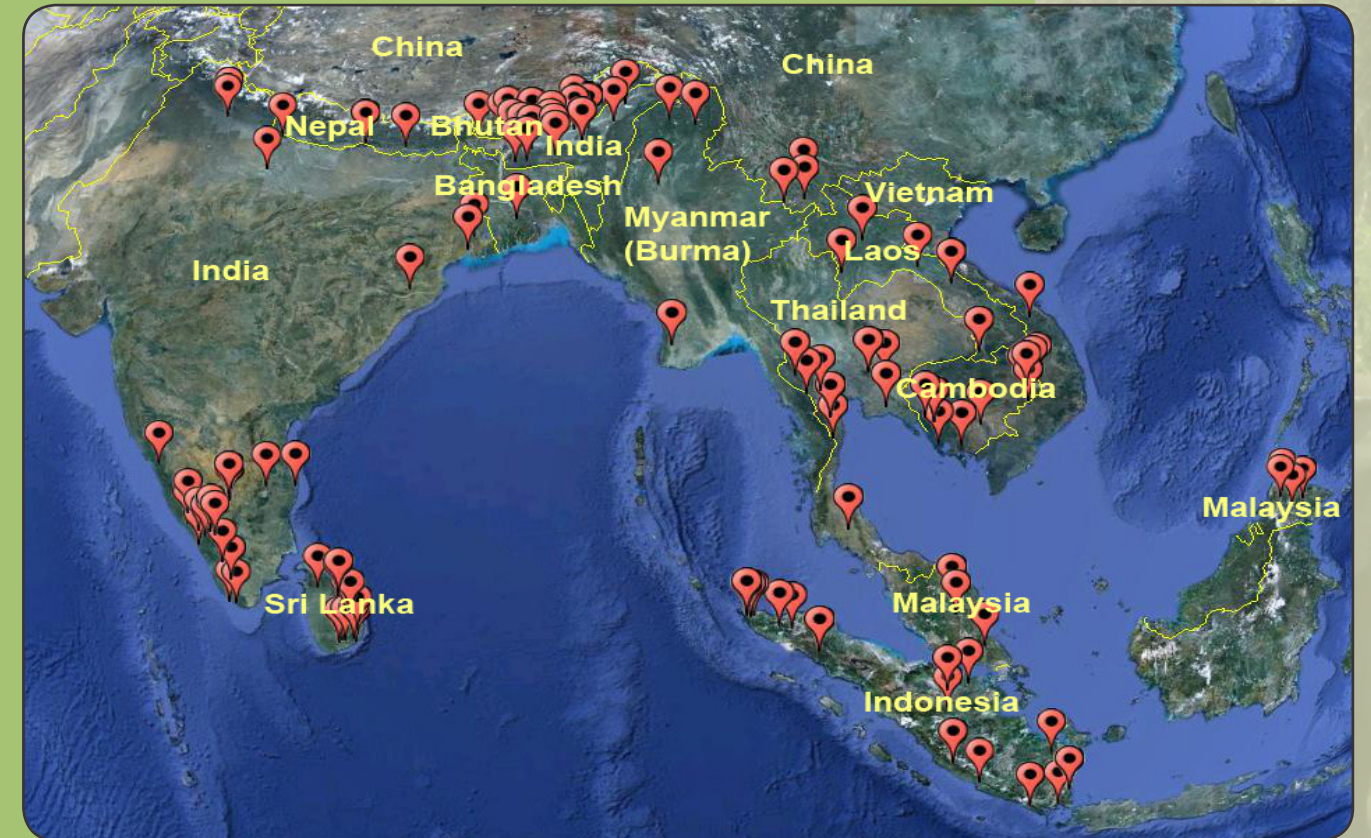
The conservation strategies supported by USFWS's Asian Elephant Conservation Fund (AsECF) recognize the multiple cultural dimensions in which elephants play a role. Given limited funding, USFWS weighs these factors to ensure conservation efforts are focused on the most globally significant and threatened populations such as those important to maintaining genetic diversity, as well as those populations facing the greatest threats from habitat loss, human-elephant conflict, and poaching.

Other important elements of the AsECF program include: education; outreach; integration of conservation to address human-elephant conflict; identification and support of emerging conservation leaders; and initiatives aimed at strengthening a community's ability to conserve their natural heritage.

Projects are selected each fiscal year based on the criteria listed in the Act as well as the published Notice of Funding Availability. Proposals are reviewed by a technical review committee who recommend the final project selections. Projects are only conducted with host country's approval.



Asian Elephant Conservation Fund Projects FY 2002 - FY 2011

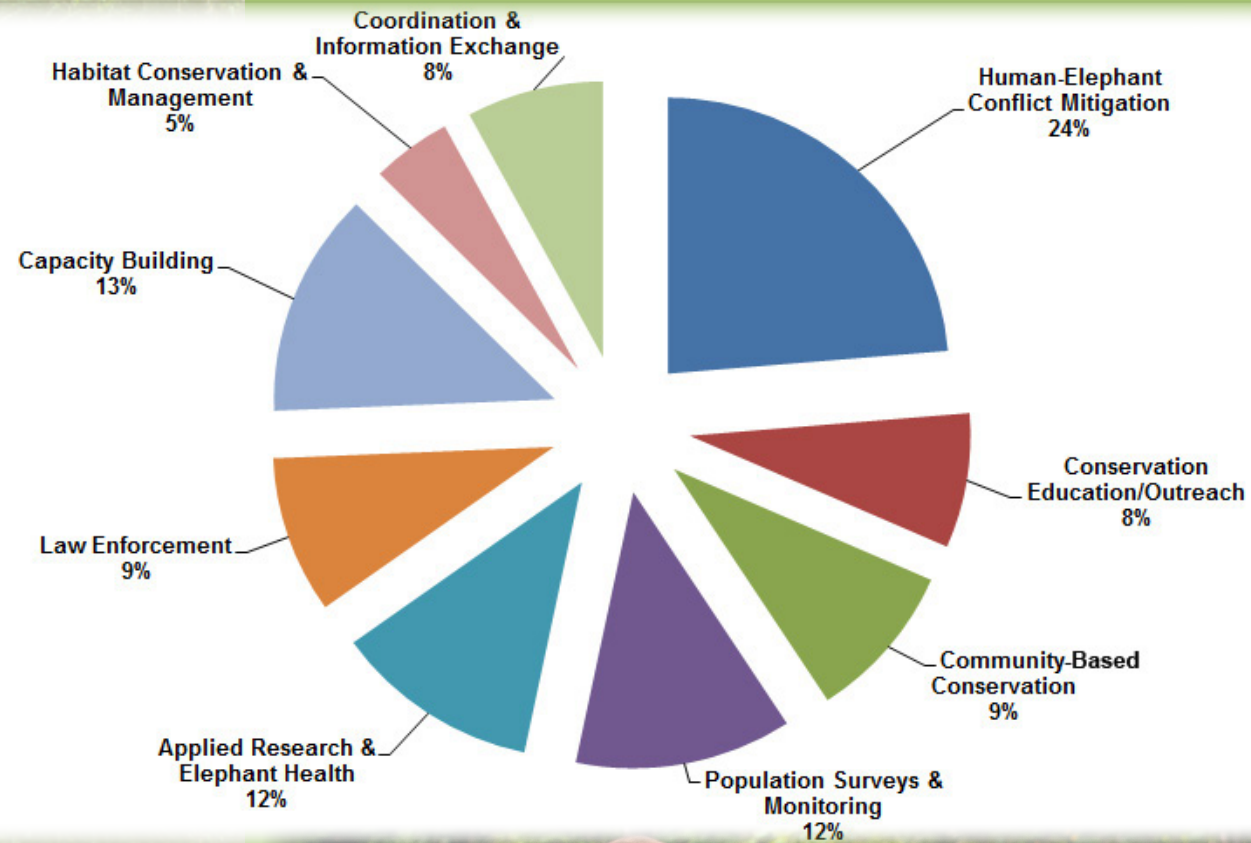


A herd of elephants in Kaziranga National Park, India. Credit: Aaranyak

Distribution of Funds by Primary Subject Area

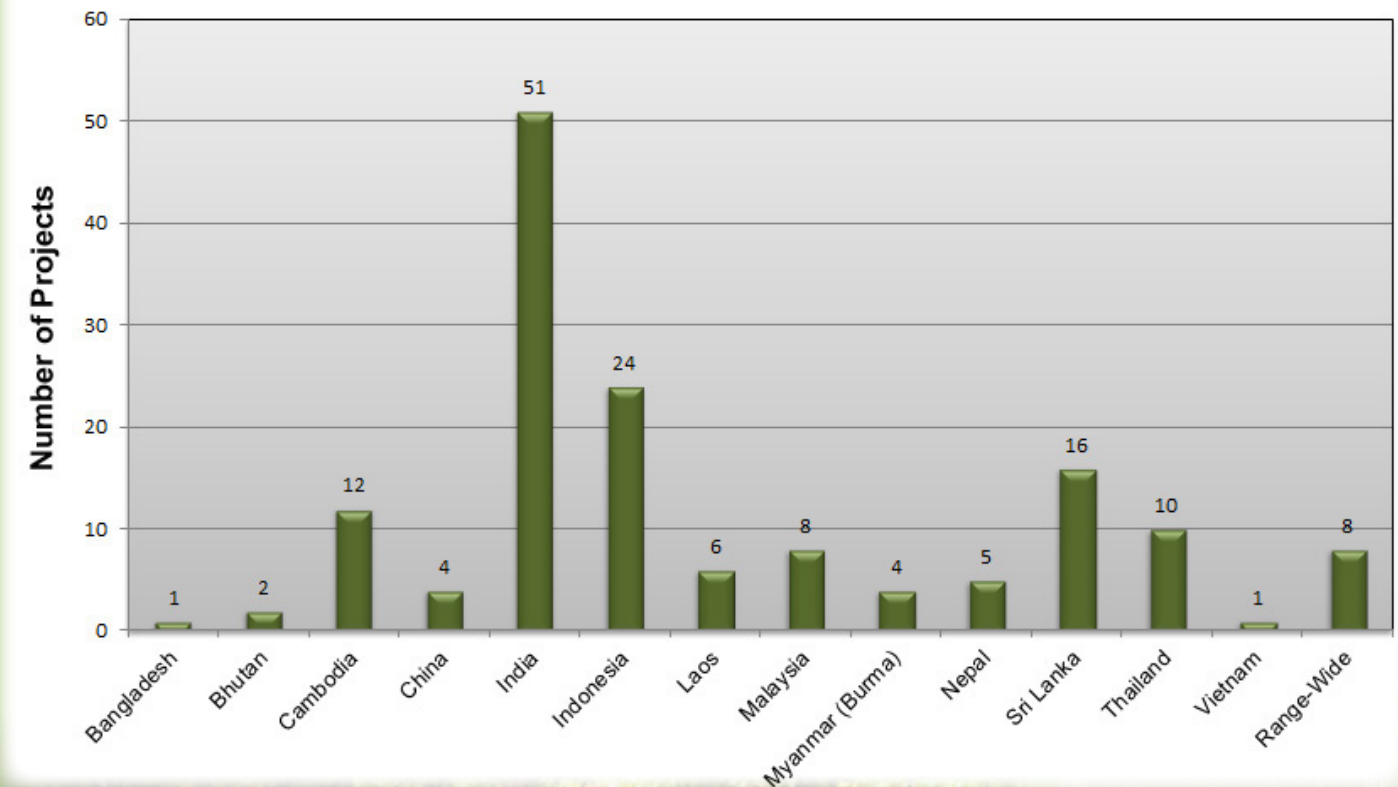
FY 2002-FY 2011

Note: Many grants are holistic and accomplish more than one of these subject areas



Distribution of Funds by Country

AseCF Project Distribution by Country
FY 2002 - FY 2011



A herd of elephants in Sabah-Borneo, Malaysia

Credit: HUTAN

Capacity Building

The Asian Elephant Conservation Fund is dedicated to supporting local conservationists to preserve their natural heritage.

The USFWS Division of International Conservation (DIC) delivers capacity building with a focus on supporting training and education, facilitating dialogue and outreach, and implementing creative learning strategies to enhance the ability of individuals and institutions to conserve biodiversity.

Asian elephants now, and in the future, need the assistance of humans to survive and thrive. With greater than 90% habitat loss, continued poaching, highly fragmented habitat, invasive species, human-elephant conflict, increased frequency of diseases, and other stressors in the environment, there needs to be a cadre of multidisciplinary teams working to prevent the extinction of Asian elephants in the wild. Future conservation professionals must include people with expertise in natural resource management, community development, outreach and education as well as values and behavior change. The thirteen Asian elephant range countries need qualified conservationists and resources to conserve their sovereign natural resources. The USFWS Asian Elephant Conservation Fund considers this a very important aspect of conservation and provides support through partners such as non-governmental organizations and local government entities for relevant capacity development activities.



Right: AsECF Program Officer, Meenakshi Nagendran, (center) and local village women actively work to protect the forest by conducting alternative livelihoods which include making juice from citrus trees. Manas National Park, India

Credit: Aaranyak

Capacity Building: LOCAL COMMUNITIES

Capacity building among local communities is crucial for the conservation of wildlife, especially Asian elephants. Compared to government personnel or conservation biologists, rural communities are most often in contact with Asian elephants. This interaction has increased in recent decades due to the limited habitat available for Asian elephants. This causes elephants to wander into areas inhabited by local communities more often in rural areas causing human elephant conflict.

The USFWS Asian Elephant Conservation Fund (AsECF) supports capacity building activities in local communities. For example, projects include conducting environmental education and providing alternative livelihood options.

In conservation projects supported by the AsECF, community members are incorporated into conservation efforts through meetings to determine threats that communities identify as the most serious. This leads to further discussions between communities and conservation groups in the design and implementation of effective and long-term conservation strategies. For example, in Cambodia, Wildlife Alliance has developed a mobile classroom, called the "Kouprey Express" to reach out to communities and schoolchildren. Supported by the AsECF since 2004 the "Kouprey Express" has conducted interactive environmental education activities with nearly 10,000 rural villagers, who are mostly school children.



They also provide a nightly three hour entertainment and education program including cinema, poetry and video to educate local communities about the importance of forests and threats that Cambodia's forests are now facing. As a result of community-based conservation projects such as these, negative attitudes towards Asian elephants are greatly reduced and local villagers learn how to earn a living by conserving their own natural resources.

Above and below: Monks and schoolchildren both partake in Asian elephant conservation education activities as part of the "Kouprey Express" program in Cambodia.

Credit (both images): Wildlife Alliance



Capacity Building: EDUCATORS & STUDENTS



Above: Children in Sumatra, Indonesia, learn how to make recycled paper and create fans with positive Asian elephant conservation messages.

Credit: Fauna & Flora International

Education in local communities is a very important capacity building tool in order to encourage and develop a conservation ethic among local communities and inspire these communities to conserve their natural resources for future generations. Focusing on children, it is vital that younger generations learn to appreciate their natural environment and maintain that conservation ethic throughout their adult lives. Most environmental education supported by the AsECF is directed at schoolchildren and families living in rural areas that most frequently come into contact with Asian elephants and other wildlife. For example, in northern Sumatra, Fauna & Flora International conducted an education program where children designed and created fans with positive elephant conservation messages.

Right top & bottom: Educators in Bhutan learn interactive and fun training techniques to use with local school groups. Credit (both images): Zoo Outreach

The AsECF also recognizes the significance of successful training for local educators. In order to deliver effective conservation messages to school children, educators must be provided with the proper resources to communicate the importance of wildlife and long-term education.

Over the past 10 years, the AsECF has supported numerous workshops and training sessions that provide educators with the most current and successful teaching strategies. For example, the group Zoo Outreach Organization Trust has conducted teacher training workshops directed towards human-elephant co-existence in select areas of India, including Tamil Nadu and West Bengal, as well as in Indonesia, Bangladesh, Bhutan, Thailand, and Nepal. Supported by the AsECF since 2007, these workshops have reached over 500 educators from nearly 300 institutions. These training workshops work to produce and deliver accurate education tools, including drama sets, finger puppets, and paper masks, to trainers so students will learn the importance of human-elephant coexistence through fun, interactive activities. Trainers also learn methods of educating students about the “do’s and don’t’s” in elephant conflict areas. These workshops help build the confidence and capacity of teachers to use new and exciting methods to educate students about human-elephant coexistence.



Capacity Building: GOVERNMENT INSTITUTIONS



Throughout the thirteen Asian elephant range countries, all protected areas are managed by local government entities. As a fellow government agency, USFWS is accepted as a respected partner committed to building mutually beneficial relationships with other governments in order to deliver effective policies regarding natural resources. The AsECF has supported numerous meetings to increase communication with government entities working on environmental issues. In 2008, the AsECF supported a range-wide meeting which brought together government agencies, non-governmental organizations, the International Union for the Conservation of Nature (IUCN) Asian Elephant Specialist Group, and other stakeholders to develop a map of Asian elephant habitat and population estimates and decide the next steps for conserving Asian elephants in the wild across their range.

Through the AsECF, USFWS is working to build the capacity of local government institutions by supporting law enforcement training and efforts to make sure that law enforcement and other field personnel have the proper resources and equipment, such as transportation, uniforms, flashlights, and GPS devices, to effectively protect wildlife in protected areas. If Asian

elephants are to survive in the wild, it is vital that poaching and illegal extractive industries, such as illegal logging, are stopped. Since 2006, AsECF has supported the International Rhino Foundation (IRF) in its efforts to protect megafauna in Bukit Barisan Selatan National Park on the island of Sumatra, Indonesia. In 2011, IRF, in partnership with the Wildlife Conservation Society and with support from AsECF, helped build the capacity of law enforcement in Sumatra through the training of law enforcement personnel in Management Information Systems (MIST).

MIST is a very important law enforcement management tool that reports illegal activities and occurrences in a database and allows conservationists and government staff to monitor and evaluate threats, which helps law enforcement to determine what areas of the forest require increased patrolling. In addition, since 2009, the AsECF has supported a project that trains forest rangers in Thailand. This program is administered in partnership with Thai military agencies and follows a curriculum that is endorsed by the ASEAN (Association of South East Asian Nations) Centre for Biodiversity. The training includes ways for protected area managers to gather and analyze data with a standardized methodology and will be very effective in helping to plan future conservation initiatives.



Clockwise, from top left: Protected area managers learn MIST techniques in Thailand.

Credit: Wildlife Conservation Society

Protected area managers install camera traps for law enforcement and population estimates in Thap Lan National Park, Thailand.

Credit: USFWS

A basic anti-poaching kit.

Credit: Wildlife Trust of India

Protected area personnel go out for patrol in China.

Credit: Beijing Normal University

Capacity Building: WILDLIFE BIOLOGISTS



Clockwise, from top left: Rangers gather and record elephant dung samples in Bukit Tigapuluh, Indonesia.

Rangers measure dung boli in Bukit Tigapuluh, Indonesia.

The lab team at the Eijkman Institute, which analyzes elephant dung data.

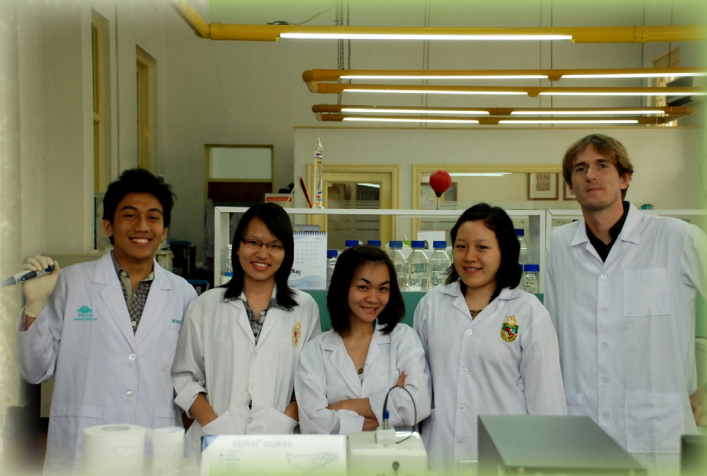
Credit (all images): Frankfurt Zoological Society

Without proper knowledge of Asian elephant population size, habitat, movements, and behaviors, conserving Asian elephants is difficult. AsECF helps build capacity of field personnel by supporting biological training to conduct accurate surveys through fecal (dung) DNA sampling or other methods and to use tools, such as GPS devices and binoculars, to monitor movement and habitat size. AsECF has also supported laboratories to analyze data, especially in regard to genetic studies of elephants. For example, AsECF projects are supporting the efforts of the organization Aaranyak to build a wildlife genetics laboratory in Assam, India. This laboratory will develop the expertise of laboratory researchers to conduct elephant dung DNA analysis, which is one of the most reliable methods for obtaining Asian elephant population estimates.



In addition, AsECF projects support many conservation activities aimed at developing the capacity of local wildlife biologists in Asia. For example, the Frankfurt Zoological Society is implementing a program, with support from the AsECF, in Bukit Tigapuluh, Indonesia, to build the capacity of Indonesian wildlife biologists to use non-invasive genetic techniques to estimate size, sex ratio, and age structure, as well as updating the distribution of Asian elephants and other megafauna in the area.

The next generation of biologists are key to long-term conservation of Asian elephants. In 2009, the AsECF supported the efforts of the Wildlife Conservation Society to train young Indian biologists working on their Master's Degrees. The training included student trips to the Bhadra Tiger Reserve and to Sikkim Himalaya. The alumni of the program published 10 peer-reviewed papers in international scientific journals with data from their dissertations, many of which were Asian elephant projects, and presented their work at seven international seminars. Graduates are presently active and working to conserve Asian elephants and other wildlife in 20 states in India.



Capacity Building: VETERINARIANS



Clockwise, from top left: Participants at the Regional Asian Elephant Range-Country Veterinary workshop in Banda Aceh, Indonesia in March 2012.

Credit: USFWS

Veterinarians learn ultrasound techniques at the veterinary workshop in Banda Aceh, Indonesia in March 2012.

Credit: USFWS

Veterinarian Dr. Arun Zachariah prepares to do an elephant necropsy on a deceased elephant in India.

Credit: Kerala Forest Department

The Asian Elephant Conservation Fund has recently begun to play a more prominent role in supporting the capacity of veterinarians in Asia to conserve wild Asian elephants. Veterinary medicine is a highly professional field and is not equally developed across Asian elephant range countries in terms of resources and knowledge. With an increase in disease transmission between both wild and captive elephants as well as with livestock and human handlers, it is important that veterinarians are able to recognize the impact of disease on elephant populations.

In addition, unknown environmental stressors resulting from highly fragmented habitats also influence elephant health. In March 2012, a regional veterinary workshop, supported by AsECF and in partnership with the Veterinary Society for Sumatran Wildlife Conservation and the Veterinary College of Banda Aceh, Sumatra, brought together veterinarians from Asian elephant range countries to learn veterinary techniques including ultrasound use, field necropsy, and ways to identify key features of significant elephant diseases from the analysis of tissue samples.

Developing pathology skills to conduct elephant necropsies is another

important area that the AsECF has more recently supported. Veterinary capacity is being developed by supporting veterinary exchanges between range countries in disease surveillance and conservation activities, veterinary internships within range countries, and workshops in the Asian elephant range countries where veterinarians are able to share their findings and establish further connections.



Success Stories

The following section highlights just some of the successes achieved in Asian elephant conservation through the support of the Asian Elephant Conservation Fund from FY 2002 - FY 2011.

Anti-Poaching & Management Systems (MIST) in Thailand

BACKGROUND & PROBLEM

As primary forests continue to be converted to agricultural land, Asian elephants are under increasing pressure from human settlements. One of the largest remaining continuous elephant habitats in Asia is the UNESCO Natural World Heritage Site of western Thailand, a series of three contiguous protected areas that cover nearly 2,400 square miles. This area contains a population of Asian elephants that is well below carrying capacity but very likely still in good numbers. This area is known as the Western Forest Complex.

Within the Western Forest Complex, Asian elephants are threatened by

poaching for ivory and other body parts due to demand from East Asian markets for jewelry and traditional medicine.

Threat: Poaching

ON-THE-GROUND IMPACT

To address the threat of poaching, the Wildlife Conservation Society, with consistent support from the AsECF has been working with the Government of Thailand to significantly increase the quality and extent of anti-poaching ranger patrols in the complex. This support has taken the form of training, in field patrol techniques and in MIST, a software program that is used to collect and analyze range patrol data to help guide upcoming ranger patrols. The AsECF has supported the purchase of equipment such as GPS units, uniforms and camping gear, and also enabled the purchase of rations for patrol teams when they are out in the field. The Government of Thailand continues to cover the great majority of expenses, primarily through paying the salaries of the rangers.



Right: Law enforcement personnel in Thailand train and patrol the forest for illegal activity.

Credit (all images): Wildlife Conservation Society

RESULTS

With the support of USFWS and others, patrol coverage is now of the highest quality in the world (indeed governments from across Asia send their ranger patrol staff to Huai Kha Khaeng, Thailand to train) and covers the entire Western Forest Complex. Poachers of elephants and other wildlife are now routinely captured and a number of indicators such as numbers of snares encountered, poaching camps encountered, or gunshots heard demonstrate that threat of poaching has clearly dropped. The Wildlife Conservation Society recently completed a partnership with the Government of Thailand to obtain a baseline measure of elephant numbers in the Western Forest Complex and plans to use this number to measure success as the anti-poaching ranger patrols continue in the future.



Anti-poaching & MIST in Thailand
 Amount awarded: \$589,583
 Amount leveraged: \$640,161
 Fiscal Years: 2005, 2006, 2007, 2008, 2009, 2010, 2011



Above: Forest patrols in Thailand catch an individual accused of illegally harvesting wood from the forest.

Left: Valuable elephant habitat in Thailand.

Credit (all images): Wildlife Conservation Society

Use of Lemon Plants for Human-Elephant Conflict Mitigation in Manas National Park, Assam, India

BACKGROUND & PROBLEM

Manas National Park is perhaps the only remaining protected habitat for elephants in the Chirang-Ripu Elephant Reserve of Assam, India. Unfortunately, human-elephant conflict is very common in the Park and has been a concern for several years. Asian elephants are often killed in retaliation for raiding village crops and destroying local homes.

With support from the AsECF, a project was initiated by the local India conservation group Aaranyak during 2005 and 2006 as a first step to assess human-elephant conflict in the areas surrounding Manas National Park.

In order to implement mitigation measures, a survey was first conducted to identify where, when, and why elephants were destroying crops, houses, and property. The results of the initial survey indicated that from 1991 to 2006, there were 305 reported crop raiding cases, 172 reported household

and property damage cases, and 31 reported human death or injury cases. From 2007 to 2009, a total of 1,226 human-elephant conflict events occurred in 93 villages around Manas National Park.

There were 6,330 reported crop raiding incidents, 136 reported household and property damage incidents, and 19 reported incidents of human death or injury. This survey showed that human-elephant conflict events increased dramatically from 2007 to 2009.

Crop damage incidents were mostly concentrated along the Park boundary and the most intense damage occurred in the villages directly adjacent to the Park. It was less likely to see human elephant conflict within the interior of the Park.

Crop raiding in the areas around Manas National Park is a seasonal phenomenon. The frequency of house and property damage was significantly higher during the non-cropping season in the months of February and August. The destruction by elephants typically took place between 12 AM and 3 AM. The least damage to households and property was in the month of December. In 60% of cases, houses were damaged due to stored rice and salt in the houses.

Threat: Human Elephant Conflict

ON-THE-GROUND IMPACT

With AsECF support, local villagers in Manas, in the state of Assam, are reviving a traditional deterrent. Villagers are planting lemon trees around their homes to keep out foraging elephants. Elephants do not like lemon trees, so this is helping to reduce human-elephant conflict in the area. In addition, farmers are earning five times more money from selling lemons than the rice crops they were previously cultivating. The project has also helped farmers gain access to local wholesale markets and has linked them to women self-help groups that use the lemons for

making pickles and lemon soft drinks. A lemon nursery has also been built through this project so that farmers can purchase lemon saplings at a low price to increase their yield and productivity.

RESULTS

Initially it was challenging to convince farmers to change their agricultural habits and plant lemon trees instead of other crops. However, enthusiastic and interested farmers were selected in the experimental stages of this mitigation method. The financial benefit the first group of farmers received compensated for the initial cost of planting the lemon trees. The citrus trees were provided for free to the farmers and they took complete responsibility of crop maintenance.

Additionally, a cost benefit study of lemon and rice cultivation in human-elephant conflict areas was conducted to see if this method was truly sustainable for local farmers. The study found that for a land plot of rice cultivation, a farmer usually receives approximately 6000-8000 Indian Rupees (\$105-\$140USD) annually, however a similar sized lemon tree plot provides farmers approximately 30000-40000 Indian Rupees (\$526-\$700USD) annually.

The results of this study motivated farmers to plant lemon trees. The study subsequently found that in many human-elephant conflict areas such as Panbari, Kahitema, Bansbari, and Bhuyanpara around Manas National Park, farmers were converting their paddy fields into fields for lemon tree cultivation. The project has developed two nurseries in Panbari and Bhuyanpara for lemon trees and for chili plants. To encourage planting of lemon trees, the farmers are receiving saplings either free of cost or at a highly subsidized rate. Recently the demand for citrus has significantly increased in the state of Assam and specifically

around Manas National Park. In addition to encouraging the planting of lemon trees that have effectively decreased human-elephant conflict, the project also supports a women's self-help group in Maidangshri. This group makes fruit juices and pickles as alternative sources of income for the women. These products are sold at local markets and also in various exhibitions held in Guwahati, Assam's capital.

Use of Citrus Plants for HEC Mitigation in Manas National Park
Amount awarded: \$145,384
Amount leveraged: \$36,086
Fiscal Years: 2005, 2007, 2010



Left: Community members tend to citrus saplings in a tree nursery.



Below: Local women living near Manas National Park in India sell lemon soft drinks and other products to help promote and assist elephant conservation in India.

Credit (both images): Aaranyak

Above: A lemon tree in Assam, India.

Below: A researcher shows a local farmer how to monitor for diseases in citrus plants.

Credit (both images): Aaranyak

Role of Veterinary Medicine in the Conservation of Asian Elephants

BACKGROUND & PROBLEM

Currently, elephant populations in Asia are under severe stress due to factors such as habitat fragmentation and degradation. These stressors are directly or indirectly related to anthropogenic human pressures on the environment. Habitat loss frequently is due to conversion of habitat for human use, and habitat degradation could result from human activity or when domestic animals share foraging habitat in forests that are important for elephants. Environmental stressors frequently have a negative impact on an animal's

health, making animals more vulnerable to diseases. Domestic animals also frequently transmit diseases to wildlife and this could result in the death of wildlife. Wild elephants are affected by tuberculosis, hemorrhagic septicemia and Foot and Mouth disease when in close contact with domestic livestock. Emerging diseases are considered one of the major threats to conservation of endangered wildlife species.

In Asian countries, wildlife veterinary medicine is still at its infancy, and this is also true for the medical management and care of elephants. As conservation efforts expand, there is an on-going need to involve experienced veterinarians in these efforts. Veterinary expertise is important in cases such as surveillance of diseases, wild elephant translocations, and treatment of injured elephants and other wildlife when they come into conflict with people or when they are trapped. Additionally, improved

veterinary expertise is needed when captive elephants are interacting with wild elephants to prevent transmission of diseases to wild populations, and when captive elephants are used for wild elephant conservation efforts (i.e., patrols of protected areas, human-elephant conflict mitigation, and local community conservation education).

In Asian elephant range countries, training veterinarians also has implications for livestock health, as livestock share habitat with wild elephants and certain diseases can be problems in both groups of animals. Veterinarians who recognize signs of these problems in elephants can better help control disease outbreaks. Furthermore, veterinary skills learned working with captive elephants have great applicability in the field.

Threat: Diseases

ON-THE-GROUND IMPACT

The AsECF has supported veterinary projects around Asia, building the capacity, professionalism, and skill of local wildlife veterinarians through practical training, a Regional Asian Elephant Veterinary Workshop, and a study of emerging diseases in a wild elephant population.

Since 2009, in Sumatra, Indonesia, the project "Providing Field Veterinary Expertise and Services for Sumatran Elephants and other endangered Sumatran Wildlife" has been implemented by the NGO Veterinary Society for the Conservation of Sumatran Wildlife (VESSWIC) in



Above: Veterinary staff treat an elephant's foot wound in Sumatra, Indonesia.
Credit: VESSWIC

Right: Veterinary staff in India monitor an elephant's breathing.
Credit: Wildvistas

collaboration with the Indonesian Agencies for Forest Protection and Nature Conservation at the provincial and national levels (BKSDA and PHKA). Routine veterinary health checks and treatments, emergency response to wild elephants in distress, post-mortems to determine cause of death, and support of conservation activities (i.e., translocation) are conducted during field operations. Additionally, staff (veterinarians, elephant camp managers, and mahouts) is provided training in elephant biology, behavior, and welfare needs as part of an on-going program as good cooperation among the staff is crucial for success. Building the capacity of local veterinarians, and enabling veterinary technicians and mahouts to better recognize and address elephant health issues, is a priority of the VESSWIC project.

In 2010, in the Nilgiris region of southern India, a project initiated by Forest Department veterinarians and supported by a grant from AsECF to the NGO Asian Elephant Support, identified emerging diseases and their prevalence in the largest single population of wild Asian elephants, and determined the impact of these diseases for long-term conservation. The project assessed health-related aspects of the free-ranging elephant population, evaluated the presence of infectious and non-infectious diseases and their dynamics in the elephant population, and identified risk factors and possible solutions to mitigate impacts. Systematic post mortems were conducted and samples were collected from both healthy and sick animals. Molecular analysis of stress activated proteins were carried out to



RESULTS

The achievement of the VESSWIC project has contributed to an improvement of the effectiveness of veterinary care for elephant conservation programs and strategies in Sumatra, Indonesia. Their activities have played a significant role in keeping elephant patrolling units operational and healthy, timely treatment and survival of injured wild elephants, and conducting post mortems which provide information about the cause of death in wild elephants. This has triggered an increased understanding amongst government agencies and NGOs of the role of veterinary medicine both in the conservation of wild and captive elephants, and in requests to continue such veterinary programs and further develop local expertise.

Reports from the Nilgiris project will provide baseline data for monitoring the health of the elephant population in the area, as well as other regions in Asia. Studies such as these show the impact of diseases on endangered populations, and would play a very important role in development of policy and habitat management.

These veterinary projects have initiated a knowledge and experience exchange with colleagues around Asia about elephant veterinary care. On-going practical training opportunities and student courses on veterinary topics will increase the number of veterinarians able and willing to provide effective health care for elephants and other Asian wildlife. The AsECF is playing a significant role in enhancing the knowledge and skills of a very specialized professional group. These veterinarians are better equipped to handle field veterinary needs and will be very important to continue to build national veterinary capacity across Asian elephant range countries.

Improving Elephant Veterinary Care and Study in Asia

Asian Elephant Support (India)
Amount Awarded: \$25,095
Amount leveraged: \$45,065
Fiscal Years: 2010

VESSWIC (Indonesia)
Amount awarded: \$153,345
Amount leveraged: \$106,912
Fiscal Years: 2009, 2011

Below Left: Veterinary staff look at samples as part of veterinary training in Sumatra, Indonesia.

Below Right: An elephant is radio-collared in Bukit Barisan Selatan National Park in Sumatra, Indonesia.

Credit (both images): VESSWIC



Below: Bengkulu Conservation Response Unit and Seblat Elephant Conservation Center Staff, Sumatra, Indonesia.

Credit: International Elephant Foundation

Captive Elephants Working for Conservation in Sumatra

ON-THE-GROUND IMPACT

With support from the AsECF, Fauna and Flora International and the International Elephant Foundation developed the Conservation Response Unit (CRU) concept in Sumatra. The CRU is founded on the belief that biodiversity is only secure when multiple conservation strategies are employed. No single method of conservation is optimal for all situations, and no single method can succeed alone.

The CRU model provides a strong link between conservation of elephants in their natural habitats (in-situ) and conservation of elephants outside of their natural habitat (ex-situ). This model is utilizing once neglected captive elephants and their mahouts (i.e. elephant caretakers) for direct field based conservation interventions to support the conservation of wild elephants and their habitat, and achieve positive outcomes for both elephants and people. By creating this link, and ensuring that these elephants are seen as an important resource and doing positive deeds, local communities, decision-makers, and other stakeholders recognize their contribution and have focused greater attention on protecting Sumatran elephants and the forests in which they live. It also brings attention to the importance of mahouts and their need to be knowledgeable and capable.

The CRU teams are composed of captive elephants from various ECCs, their mahouts, government forest rangers, and conservation officers, and placed in targeted working areas. Each CRU post conducts patrols monthly, during which team members record sightings or evidence of illegal activities, human-wildlife conflicts, and wildlife presence. Communities in these critical conservation areas are exposed to elephants in a positive context through their physical presence while passing through villages on patrols. Working in partnership with local government, local communities, and NGOs, the

BACKGROUND & PROBLEM

Indonesia is rapidly losing its forest cover as land is converted to large-scale agricultural plantations (i.e. oil palm, rubber, etc.). As a result of escalating human-elephant conflict in the 1980's, the Indonesian Directorate General of Forest Protection and Nature Conservation (PHKA) ordered the capture of wild "problem elephants" and Elephant Training Centres (ETCs) were established in six provinces throughout Sumatra. These were later renamed Elephant Conservation Centres (ECCs). Several hundred elephants were captured, and there was a high mortality rate in the capture and initial training process. An unexpected result of the capturing policy was over-crowding in all ECCs in Sumatra. Additionally, all the centers lacked the necessary funds and management techniques needed to properly house and care for the elephants. As a result, the camps could not demonstrate their role in the global effort to conserve elephants in their natural habitat, which was part of their original purpose.

Threat: Human Elephant Conflict



Below: A member of the CRU patrols the forest in Aceh, Indonesia.

Credit: Fauna and Flora International



CRU project has 4 main objectives: 1) mitigating human-elephant conflict; 2) reducing wildlife crime activities in the important elephant habitat through forest patrol and monitoring; 3) raising awareness among local people of the importance of conserving elephants and their habitat; and 4) establishing community-based ecotourism to ensure long-term CRU financial sustainability.

With the establishment of each CRU team, project partners have focused on capacity building for staff, in particular the mahouts. In 2006, the Sumatran mahouts developed their own association: the Indonesian Mahout Communication Forum (FOKMAS). AsECF grants to the International Elephant Foundation have conducted training sessions for FOKMAS with topics covering survey and forest monitoring techniques, field navigation techniques using GPS, human-elephant conflict mitigation, wildlife data recording, and community awareness.

RESULTS

Field-based conservation interventions in Sumatra have opened up an alternative future for captive elephants and their mahouts. Captive elephants play an important role by providing transportation during forest monitoring and patrol activities, gaining local community interest during awareness events, and driving away crop raiding wild elephants when conflict incidents arise. Mahouts, as part of the CRU team, not only take care of the elephants but are involved in all CRU activities and have gained training and experience in wildlife observation techniques, field use of navigation devices, and mapping. Each CRU site has developed its own capacity to address local issues: In Bengkulu the CRU successfully prevented land encroachment and illegal logging inside the ECC area and identified the need to increase the protection status of this area. This forest was given a higher level of protection and declared a "Tourism Nature Park" by PHKA in 2011.

The CRU in North Sumatra, in collaboration with Gunung Leuser National Park, is working closely with the local community and helped develop eco-tourism in the Tangkahan area, as one way to maintain the CRU objectives along with the community which supports itself through eco-tourism activities.

In Aceh, the CRU teams work with local villagers creating community ranger teams to work alongside the CRU for effective forest protection. The surrounding villages welcome the CRU posts in Way Kambas National Park as their focus is human elephant conflict mitigation by preventing wild elephants from straying out of the Park and into surrounding crop fields.

The continued presence of the CRU posts will ensure that human-elephant conflict issues do not create animosity in the local communities. Conflicts have led to elephant poisonings by villagers throughout Sumatra. For Indonesia the CRU concept is intended to be one step in reviewing and adopting a new culture of managing elephants, in the wild and in captivity, with the view to ensure acceptance of improved human-elephant relationships within the framework of the country's development programs, and as part of the Sumatran Elephant Conservation Strategy.

Captive Elephants Working for Conservation in Sumatra
Amount awarded: \$359,588
Amount leveraged: \$740,968
Fiscal Years: 2004, 2005, 2007, 2008, 2009, 2010, 2011

Below: Elephant Response Units in Way Kambas, Indonesia, chase wild elephants away from crops.

Credit: Way Kambas National Park



Right: A herd of elephants moves through the forest in Sabah, Borneo, Malaysia.
Credit: USFWS

Estimating Asian Elephant Population Size and Distribution

BACKGROUND & PROBLEM

Due to extensive conversion of their habitat to agriculture, Asian elephants now have only 10% of their historic range – typically on mountainous, rugged lands ill-suited for agriculture. This last 10% is also fragmented into many small patches, and within each patch Asian elephant populations are well below their carrying capacity due to persistent hunting and frequent retaliatory killing as a result of human-elephant conflict.

While local Governments and NGOs collaborate to alleviate these threats, a key component of their efforts is to determine the Asian elephant population size within each patch as a means to determine if their management actions are effective. Estimating elephant population sizes in the tropical rainforests of Asia is a significant technical challenge as the forest canopy is too thick to enable aerial counts. Furthermore, many of the remaining



patches contain small Asian elephant populations because of high poaching pressure. When Asian elephant populations are low, it is difficult to obtain an accurate account using visual assessment methods.

To invest grant funding wisely and to make long-term management decisions, it is important to know whether a population is increasing or decreasing, and how it is distributed in its habitat. Absence of knowledge increases extinction risks.

Threat: Lack of Science and Management Capacity

Right: Wildlife biologists learn how to estimate elephant population methods using elephant dung in Cambodia.
Credit: Wildlife Conservation Society



ON-THE-GROUND IMPACT

To address the inability to determine Asian elephant population sizes in areas with low numbers of elephants, Wildlife Conservation Society (WCS), with the support of the Asean Environmental Cooperation Fund (AsECF) and in collaboration with the Government of Laos PDR and the University of Missouri, devised a technique to determine Asian elephant populations using DNA extracted from elephant dung. This technique was first tested with the Asian elephants in the Nakai region of Laos and was done simultaneously with the 'dung-decay' population estimation approach (a technique to estimate Asian elephant population sizes in patches where there was thought to be moderate to large numbers of elephants, for example, 150-500 elephants).

Dung-decay and dung DNA to estimate elephant populations can be excellent surrogates for actual visual counts for a forest species. In order to accomplish this there needs to be the science capacity in the region, which is an important objective of the AsECF.

RESULTS

For the Nakai elephants, the dung DNA based approach indicated there were 132 elephants while the 'dung decay' approach indicated 142. The two methods were statistically robust and the similarity of the results of the 2 methodologies indicated the validity of the dung DNA approach for estimating population size. Over the past decade, and with support from the USFWS,

WCS has used both the dung DNA and the dung decay approaches in several other countries in southeast Asia to estimate Asian elephant populations, including in the Seima region of Cambodia where there are 116 elephants, in the Taman Negara region of Malaysia where there are 631 elephants, and in the Endau-Rompin region of Malaysia where there are 135 elephants. In all cases these population estimations have informed the management decisions of local governments and WCS, and several repeat surveys are underway to determine the efficacy of the conservation efforts. Scientifically established methods of population estimates exist and accommodate a variety of conditions, including small populations, large populations, animals that are difficult to visually count due to habitat conditions and other factors that could affect survey results.

Estimating Asian Elephant Population Sizes
Amount awarded: \$758,991
Amount leveraged: \$886,357
Fiscal Years: 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011

Below: In Thailand, training sessions are held to teach wildlife biologists the different methods of measuring elephant populations.



Left: The forests of Seima, Cambodia, which provide valuable habitat for hundreds of elephants.

Credit (both images): Wildlife Conservation Society



Assessing Human-Elephant Conflict & Monitoring Elephant Movements in Sri Lanka

BACKGROUND & PROBLEM

Asia is one of the most densely populated regions globally, and over much of the Asian elephant range, elephants are increasingly forced to share space with humans. Elephants are the largest terrestrial vertebrates and consume hundreds of pounds of food daily.

They are greatly attracted to crops, which are often of far superior quality nutrient wise than natural forest fodder. Elephants raid crops regularly and the ensuing human-elephant conflict (HEC) has become a major conservation, socio-economic and political issue across the range. In Sri Lanka annually, over 200 elephants and 70 humans lose their lives from HEC. While the situation is extreme in Sri Lanka – an island of 25,096 sq.miles with over 20 million people and around 6,000 elephants - it is characteristic of the entire Asian elephant range.

Asian elephants are difficult to study and little scientific data exists that can guide management. Consequently, management has been entrenched in traditional practices based on archaic beliefs. Across the range, the main approach to elephant conservation and HEC mitigation has been restricting elephants to protected areas. In Sri Lanka, after 60 years of such attempts, elephants still range extensively outside protected areas. The main techniques

employed in elephant management including capture-translocation, elephant drives, and electric fencing, were not previously evaluated scientifically.

The main objectives of the Centre for Conservation and Research (CCR) are to understand 'normal' elephant behavior and ecology, assess the impact of management and development activities on people, elephants, and human-elephant conflict, and based on these findings, implement elephant management policy, strategies, tools, and actions which effectively conserve elephants and mitigate human-elephant conflict.

Threat: Human - Elephant Conflict and Habitat Loss

ON-THE-GROUND IMPACT

The CCR has developed a number of new survey methodologies and new tools to mitigate HEC. Fifty elephants were tracked with GPS satellite collars for the first time in Asia and observational, field and laboratory studies were conducted across Sri Lanka.

Some of the CCR's main findings were: 1) elephants in Sri Lanka did not migrate but had distinct home ranges of 19-97 sq miles and many did not wander from these ranges; 2) optimal elephant habitat was not undisturbed forest but rather habitats that were mildly disturbed by shifting agricultural practices; 3) elephants that were captured and moved to another habitat either returned to their original habitat, or created the same problems in new areas and suffered higher mortality causing wider-spread intensification of HEC, 4) driving elephants back to the forest or away from the area increased HEC as only some were removed and those remaining became more aggressive; and 5) elephant herds that are restricted to parks by electric fences actually suffered a higher mortality rate and had negative impacts, such as resource competition.

Below: Two male elephants stand at the fence boundary of Uda Walawe National Park in Sri Lanka.



Above: Protected Area managers examine a fence topped by elephants in Sri Lanka.

Credit: Centre for Conservation and Research

This work has produced 30 publications, innumerable presentations at national forums and 10 presentations at international scientific forums.

These studies dispelled a suite of long held beliefs on which management was based and showed that 'limiting elephants to protected areas' was detrimental to elephant conservation and failed to mitigate HEC. Because a change in paradigm was needed, the CCR developed an alternative approach for elephant conservation and HEC mitigation, advocating phasing out capture-translocation and elephant drives, and revision of electric fencing. A landscape approach was proposed where areas with elephants would be recognized as Elephant Conservation Areas (ECA) integrating both protected areas and outside areas. Outside protected areas with elephants would be recognized as Managed Elephant Ranges (MER) where human-elephant coexistence would be promoted through protecting settlements and cultivations with electric fencing, land use planning and managed shifting agriculture.

Over the past 10 years, the CCR has received four grants from the AsECF. These funds initiated the CCR's long-term studies on elephant conservation. This has enabled the CCR to continuously build its work and leverage additional funds from international funding agencies, international and national conservation agencies, and individuals.

RESULTS

At the local scale, the CCR is ensuring a better future for elephants and people by identifying critical passages and high use areas for elephants, increasing awareness, and engaging in community action. The CCR's work in the South resulted in over 400 elephants in Mattala being allowed to stay where they were, instead of being driven to parks. In the South and Northwest, the CCR's work resulted in

local government authorities and communities taking up protection of settlements through electric fencing and allowing elephants free range in surrounding areas. Seasonal electric fencing for paddy fields in the South was successfully developed and implemented and is currently being promoted in the Northwest through agricultural authorities and farmer organizations. These activities positively impact over 1,000 elephants. In the East, the CCR's data has been used to change development plans that threatened a critical elephant use area, which benefits around 100 elephants. In the North-central area the CCR's data are being used to plan electric fence locations near the Kala Wewa and to push for changes in irrigation development threatening critical resources for around 1,000 elephants in Minneriya-Kaudulla.

The CCR's work was the basis for a 'National Policy for the Conservation and Management of Wild Elephants' in 2006, and a 'National Action Plan' in 2010. Although these have not been implemented in full, many components have been and are continuing to be implemented. Capture-translocation and elephant drives have also been minimized. The focus of electric fencing has been shifted from boundaries of protected areas to boundaries of developed areas. These actions positively impact all elephants in Sri Lanka numbering around 6,000.



Assessing the HEC & Monitoring Elephant Movements in Sri Lanka
Amount Awarded: \$219,459
Amount Leveraged: \$261,890
Fiscal Years: 2005, 2009, 2010, 2011

Below: A group of elephants in Yala National Park, Sri Lanka.



Below: Two young males joust in Sri Lanka.

Credit (all images): Centre for Conservation and Research

Salakpra Elephant Ecosystem Conservation Alliance, Thailand

BACKGROUND & PROBLEM

The AsECF is supporting two education and outreach projects being implemented in Thailand by the Elephant Conservation Network in partnership with Zoological Society of London. The target area is the southern half of Thailand's Western Forest Conservation Complex (WEFCOM) within Kanchanaburi province and is on the border of Myanmar (Burma). Within southern WEFCOM, the primary focus of this project since 2005 has been the 463 square mile Salakpra conservation area which includes a small adjoining national park and two national reserved forests. Salakpra was the country's first wildlife sanctuary to record crop-raiding - the most publicized form of human-elephant conflict (HEC) in Thailand.

Since HEC poses such a threat to wild elephants, the aim is to understand and alleviate the diverse causes of conflict on both sides of the equation, in order to reduce elephant impacts on humans as well as human impacts on elephants. The project is establishing a model of HEC mitigation that can be used elsewhere in Salakpra and in Thailand. Two fact-finding projects undertaken in 2006 and 2007 (a forest survey and a socio-economic study) yielded findings that prompted the formulation of the education-outreach projects highlighted here. The survey showed how heavily villagers relied on forest resources for a living and also illustrated how much community forests have diminished and how little people understand about elephant ecology and behaviour.

Several thousand people living within 0.77 square mile of Salakpra directly or indirectly depend on the conservation area for a living. Illegal human activities that exploit this area's natural resources include hunting, logging, bamboo cutting, cattle grazing, limestone mining, mushroom gathering and other non-timber forest product (NTFP) collection. At the same time, community forests that were part of Thai traditional life have degraded, and the knowledge and folk wisdom that informed villagers about elephants and their ecosystem have been lost.

Threat: Human Elephant Conflict and Poaching

ON-THE-GROUND IMPACT

In 2008, the Salakpra Elephant Ecosystem Conservation Alliance (SEECA) was established with community leaders and villagers to develop a collaborative partnership between communities and the protected area. Intended to take pressure off of elephants and their habitat, the first project helped people who unsustainably collect forest products develop alternative livelihoods that do not depend on the conservation



Above: A planning workshop is held in Thailand for the Salakpra Ecosystem Conservation Alliance (SEECA).



Above: In Thung Na, Thailand, volunteers show local communities how to have sustainable alternative livelihoods, such as mushroom farming.

Right: The SEECA recycling group makes papier mache with local schoolchildren in Thailand.

Credit (all images): Elephant Conservation Network/Zoological Society of London



area. After many meetings to identify participant groups, determine organizational structure, establish work plans, and discuss possible projects, Elephant Conservation Network facilitated workshops, study trips, and training courses to develop SEECA members' ability to produce business models, seek funds, and launch enterprises.

The SEECA project is also improving the conservation and sustainable use of forest resources inside the conservation area by allowing registered community members to harvest an agreed quantity of named NTFPS in mapped forest-use zones. At the same time, it is helping villages create or restore community forests and manage systems of policing and protection that will benefit wildlife as well as registered forest-users, while deterring non-local forest users.

Activities to date include:

- training villagers to map forest use zones using GPS and to carry out simple assessments of the forest resources and biodiversity in each zone.
- forest assessment surveys in each zone with village representatives to make maps for each community with information on key species to use, conserve or restore.
- workshop to review findings, identify, and agree on areas to be used for NTFP collection and areas to be co-managed as a community-conservation area.
- workshops to develop agreed rights, responsibilities and regulations (3Rs)

for sustainable forest use and conservation, as well as a system of monitoring.

Building on an AsECF funded project pioneered by ZOO-Wild India entitled 'Getting Along With Elephants', Elephant Conservation Network is modifying the teaching guide and associated materials for use in Thailand by teachers and other educators. A series of workshops were held to train interested participants in how to use these training materials. The aim is to establish a human elephant coexistence (HECx) unit that will train educators and target schools, NGOs and governmental agencies in southern WEFCOM and elsewhere in Thailand where HEC is an issue.

RESULTS

By late 2009, 12 groups of 5-8 forest users in five villages had established business enterprises with start-up funds from Elephant Conservation Network. These enterprises included mushroom growing, fruit drying, sewing, bamboo plantations, and a medicinal plant nursery. Group members have used their business development skills to launch new enterprises in chicken, pig, and rabbit rearing as well as egg production. Two mushroom enterprises (run by women) are still going strong and six young mothers are also making jewelry to sell on an online site.

Thirty-seven people (18 community leaders and 19 farmers) attended two workshops on the impacts of forest degradation and climate change; 25 participants from five villages were also trained in the use of GPS and maps for forest assessments and have since mapped their areas of community forest and provided data that allowed each village to assess the status of these forests at workshops. Each community has now drawn up its own rules and regulations to govern forest use and conservation. Every six months those trained in forest assessments repeat the exercise to monitor changes.

Salakpra Alliance in Thailand
Amount awarded: \$313,208
Amount leveraged: \$1,060,735
Fiscal Years: 2006, 2008, 2009, 2010, 2011



Top Left: A planning workshop is held in Thailand for the Salakpra Ecosystem Conservation Alliance (SEECA).

Above: A young woman makes jewelry as part of the SEECA alternative livelihood program.

Below: SEECA staff talks to a local farmer about different alternative and sustainable livelihood options.

Credit (all images): Elephant Conservation Network/Zoological Society of London



Joint Efforts to Save the Transboundary Population of Asian Elephants Between China and Laos PDR

in Luang Namha Province of Laos PDR. Many conservationists believe this transboundary area holds the highest chance of conserving the last fragmented old-growth rain forest and habitat for Asian elephants in the upper Mekong basin.

Threat: Poaching and Human Elephant Conflict

ON-THE-GROUND IMPACT

With the support of the AsECF, the BNU team and protected area staff conducted rural socio-economic assessments in Laos PDR and China to understand the conservation and development needs of the communities along the border region of the transboundary protected areas. These assessments included evaluating the livelihood status and possible alternatives for rural development. In addition, surveys were conducted to gather information about the current elephant population size, migration corridors, and human-elephant conflicts. Approximately 10,000 educational calendars were distributed to local communities in both China and Laos PDR to promote public awareness of the importance of wildlife and forest conservation.



BACKGROUND & PROBLEM

Beijing Normal University (BNU) started its Asian elephant research in the Xishuangbanna area of China and its neighboring regions in northern Laos PDR in early 2002. From 2003 to 2012, three grants of the AsECF has been awarded to BNU to set up standard wildlife survey methods and provide trainings for rangers from Xishuangbanna and Namha protected areas in China and Laos PDR. These grants also enabled BNU to provide infrared camera traps and with support from the AsECF, BNU established the first cross-boundary protected area of 123,000 acres between China and Laos PDR in 2009 to link the Shangyong Protected Area in Xishuangbanna of China and Namha protected area



Above: A group of elephants in China.

Right: Chinese and Laotian Protected Area managers work together to conserve mutual natural resources.

Credit (both images): Beijing Normal University

Joint Efforts to Save Transboundary Population of Asian Elephants Between China & Laos PDR
Amount awarded: \$50,000
Amount leveraged: \$65,000
Fiscal Years: 2008



Left: Forest in elephant-bearing areas of China.

Credit: USFWS

RESULTS

In October 2011, the BNU Asian Elephant Project engaged China's Xishuangbanna Nature Reserve and the Agriculture and Forestry Department of Phonsali Province in Laos PDR to sign a new Memorandum of Collaboration adding another 123,000 acres in the transboundary protected areas between Mengla and Phonsali. In the spring of 2012, the BNU team began working with five protected areas in China and Laos to build a protected area network and plans to introduce regular management tools to promote the habitat, elephant habitat management, and develop alternative livelihoods to poaching.



Left: Protected area managers in China learn about survey methods through trainings. Right: A group of elephants in China.

Credit (both images): Beijing Normal University



Future Actions for Asian Elephant Conservation

THE ASIAN ELEPHANT CONSERVATION FUND IS KEY FOR THE LONG-TERM CONSERVATION OF ASIAN ELEPHANTS IN THE WILD

Conservation often takes a backseat to economic development. Most Asian elephant range countries are experiencing rapid economic development.

Unplanned development frequently has a negative impact on biodiversity conservation. For example, India with over 50% of the wild Asian elephant population, has one of the most rapidly developing economies and human populations in the world. Many countries do not have funds readily and consistently available for wildlife conservation, especially those countries that are facing pressing human poverty and welfare issues. Therefore, the AsECF is needed to continue efforts to protect this charismatic and widely-loved species. As wildlife and human needs change over time, it is important to evaluate what has been done and what needs to be done to address environmental

issues important to elephant conservation and habitat protection. In an era of rapidly increasing human populations, dwindling wild habitats, global climate change, and growing competition for natural resources, ensuring the long-term viability of landscapes is crucial not just for Asian elephants but for all wild species and humans. Human populations benefit immensely from the ecosystem services that wild spaces provide, such as fresh water, flood control, global climate moderation, and disease minimization. Building partnerships, combatting poaching, providing economic alternatives, restoring habitat, mitigating human elephant conflict and supporting education and awareness programs will help sustain Asian elephant populations and their habitats into the future. USFWS and its partners look forward to engaging in sustainable conservation programs that embrace these approaches.



Right: A herd of elephants at sunset in Mattala Managed Elephant Range (MER) in Sri Lanka.

Credit: Centre for Conservation and Research

Future Actions: BUILDING PARTNERSHIPS & EXCHANGING INFORMATION



The AsECF strongly encourages groups to work together and share conservation ideas effectively in order to avoid duplication and enhance conservation efforts. Many conservation groups prefer to stake out their own areas of work (such as a territory), but this has not always been helpful to the natural resources they wish to conserve. Networking helps conservation in many ways.

For example, it is important to know the reasons for successes or failures of mitigation measures in various regions, and make current data widely available to most effectively prioritize issues such as wildlife corridors or habitat restoration. Just as Asian elephant populations share habitats and resources with other wildlife and human populations, it is time for conservationists to better share information and resources and to formulate transdisciplinary approaches to tackle the modern-day issues of Asian elephant conservation.

Clearly, threats facing Asian elephants in the wild are complex and difficult to solve. A paradigm shift is necessary to identify ways in which Asian elephants are protected for future generations. Such an approach to

wildlife conservation requires coalitions that include, for example, wildlife biologists, social scientists, anthropologists, land-use planners, marketing specialists, health-care professionals, creative educators, and micro-credit financiers. It is very important to engage other expertise that is not typically associated with wildlife conservation in order to address the many issues that surround the loss of wildlife, such as livelihoods and elephant and human health. Many lessons can be learned from the work currently being done to support the conservation of species other than Asian elephants, including some of the projects that are supported by the other Congressionally appropriated Multinational Species Funds within USFWS.

While individuals build their careers, they are not necessarily trained in the art of communication, networking, teamwork, conflict resolution, and partnership building; all tools that can be used to reach out to people working in other fields of expertise. Most conservation biologists become involved in the field of wildlife conservation because of their passion for animals, wildlife, and the outdoors. However, if conservation of wildlife, especially of Asian elephants, is to succeed in a human-dominated landscape.



Top Left: Protected Area managers undergo training in Southeast Asia.

Credit: Wildlife Conservation Society

Top Right: Conservationists from across the range countries exchange ideas at a meeting about human-elephant conflict in Beijing, China.

Credit: USFWS

Below: Conservation staff meet with local villagers to distribute materials and conduct awareness activities near Kui Buri National Park, Thailand.

Credit: World Wildlife Fund



Future Actions: HABITAT RESTORATION

Habitat loss is the biggest threat facing Asian elephant populations. Continued loss of habitat results in increased human-elephant conflict and severely hinders the chances of elephant survival. Over 90% of Asian elephant's historical habitat has been lost - clearly, there is a need for habitat restoration efforts

across the Asian elephant range.

One of the main drivers for habitat loss is increased human populations in elephant-bearing areas. Therefore, projects that incorporate public health and ecosystem health among local communities should be considered for the success of long-term conservation of Asian elephants and their habitats. The AsECF is in no way capable of solving human poverty alleviation

issues, but applicants who form capable coalitions that can address wildlife and human needs could apply to the AsECF for start-up funds and leverage other sources of funding that support human needs such as the World Bank or the U.S. Agency for International Development (USAID).

Improper land-use policy and plans also hinder habitat conservation and restoration efforts. For example, lack of effective land-use plans or proper implementation of land-use plans allow for easy encroachment into protected areas. The absence of plans also exacerbates protection of corridors between protected areas cutting off connectivity between elephant bearing areas, and increases fragmentation of habitat.

Now more than ever, there is a need to think in terms of "sustainable management" of natural resources. With accelerating global climate change and worldwide recognition of the need for restoration and conservation of natural forests for the purposes of carbon sequestration, protection of ecosystem services, and natural disaster mitigation, there is now further opportunity to expand ideas on habitat protection, including carbon credits and ecotourism development.

Furthermore, there are several methods that can be further explored, such as the use of fire to manage ecosystem, and help conserve forest habitat. If well-planned and researched, prescribed burns and herbicides can be used to control invasive species and to open up areas for grasslands. Mechanical means, such as manually pulling the invasive species with a tractor, can also be used to help eradicate or manage these species.



Above: The remnants of a paper and pulp concession in Sumatra, Indonesia. Habitat destruction is the biggest threat to the survival of Asian elephants.

Credit: Frankfurt Zoological Society

Below: Valuable elephant habitat in Kui Buri National Park, Thailand.

Credit: World Wildlife Fund



Future Actions: HUMAN-ELEPHANT CONFLICT MITIGATION



Humans and elephants have co-existed for a very long time and can continue to do so, with proper conservation

measures. Up until the last several decades, this co-existence was relatively peaceful. However, this co-existence is currently being threatened by human-elephant conflict (HEC) – an issue that has arisen in Asia due to shrinking forest habitat and expanding human populations. As Asian elephants lose habitat, they begin to wander out of the forest and into communities and villages that border the forest. Without palatable food in the forest, elephants have begun to raid villagers highly attractive crops, which are often communities' sole source of income. Humans often retaliate against elephants by shooting or poisoning the elephant, and elephants have been known to become aggressive towards humans. Both elephants and humans have been killed as a direct result of human-elephant conflict.

For conservation of any species, one size does not fit all in regards to every Asian elephant range country. Therefore, a transdisciplinary approach to conservation is critical for HEC mitigation. Almost all HEC projects primarily react to conflict instead of preventing conflict. While it is important to address conflict when it arises, especially if the welfare of the people living near elephant habitat is taken into consideration, such an approach has not provided for a long-term sustainable solution to HEC. In order to effectively

and sustainably address HEC, there is a need to work with not only wildlife biologists but also with social scientists, land-use planners, communication specialists, marketing specialists, policy analysts, and education specialists. It is essential to understand the ecological needs of elephants, reduce human impacts on elephant habitat, implement environmentally sensible land-use plans, and engage people and communities in conservation efforts that are essential for the survival of Asian elephants and their wild habitats across the 13 range countries.

If it becomes unsustainable to have a growing elephant population in a specific area because of severe habitat loss or HEC, it is important to weigh many management options, one of which might be immunocontraception. Immunocontraception could be used to decrease the number of female elephants that reproduce without affecting herd dynamics, or it may be used to reduce aggression in male elephants that come into "musth" without permanently removing the animal. Immunocontraception involves injecting a non-hormonal (for the female elephant) or hormonal vaccine (for the musth male) via a dart to temporarily sterilize the animal and in the case of the musth male reduce aggression significantly.

It is now being used in African countries to manage free ranging African elephants. This could potentially be a very useful management tool particularly in areas of resource depletion, highly fragmented habitats, and HEC.



Top left: A wild male elephant in a tea estate in Valparai, India. Top right: A home destroyed by a wild elephant in Valparai, India.

Credit (both images): USFWS

Below: A wild male elephant stands at the edge of the forest in Thailand. Elephants' shrinking habitat is causing humans and elephants to be in closer contact than ever before.

Credit: USFWS



Future Actions: ECONOMIC ALTERNATIVES



Above: Tourists are taken on elephant treks through the forest as part of ecotourism initiatives in Kaziranga National Park, Assam, India.
Credit: Aaranyak

Below right: A tourist bathes an elephant in Tangkahan, Sumatra.
Credit: USFWS

Below left: Local communities are involved in tree nursery development programs near Kaziranga National Park, Assam, India.
Credit: Aaranyak

Many rural villages and communities that experience the highest frequency of conflict with Asian elephants are predominantly subsistence farmers. There are several cash crops these farmers could cultivate that have been shown to be undesirable to elephants. For example, chili peppers and citrus trees are very profitable cash crops and are less likely to be raided by hungry Asian elephants.

Another example of an agriculture-based deterrent that has shown to be successful in some range countries to deter elephants are fish ponds at the perimeter of crop fields. Fish farming is a very profitable business and it helps to deter or slow down the movement of elephants into crop fields. Any alternative crop or livelihood needs to have a sound marketing plan, and a clear link with conservation.

Many threats that are facing Asian elephants and their habitat are a result of extractive industries, such as logging, or encroachment onto protected areas by cultivating land for agriculture or building settlements. It is important for conservationists to look at ways in which communities can benefit from forest protection and restoration, such as providing carbon credits directly to the communities involved in habitat protection and restoration efforts. Some carbon credit funds could also go to support protected area management efforts, continued training for protected area managers, or similar immediate benefits.

In addition, ecotourism, if properly developed and executed, would provide local communities with income from tourists while securing community protection of the forest and its wildlife. Furthermore, ecotourism also has the potential to inspire a conservation ethic and pride for natural resources among local people, and in turn, helps to eradicate poaching through community pressure and encourages an instinct to protect these magnificent creatures. Such efforts would provide greater long-term habitat security and viability for elephants and other wildlife.



Future Actions: EDUCATION & AWARENESS



Left: Human elephant co-existence project in South Asia - a local villager participates in Bangladesh.
Credit: Zoo Outreach

Education and awareness are crucial pillars for successful natural resource protection. The AsECF currently supports many effective conservation programs aimed at inspiring young people to care about the planet and be motivated to conserve wildlife and natural resources for many years

national school curriculum in Asian elephant range countries should be a priority. Consistent and engaging environmental education needs to be delivered to schoolchildren on a regular basis.

The AsECF recognizes the need for high-quality educators. Education and community awareness projects should be creative, train the trainers and teachers, and consistently update resource materials. These projects should also be open to successful ideas and methods from other areas. Although the AsECF is currently funding projects that train educators, this area has a lot of potential growth and the AsECF is committed to supporting interactive educational projects that work to enhance the future generation's capacity to carry out wildlife conservation.



Left: Conservation staff reach out to local communities living near Kui Buri National Park in Thailand to conduct awareness activities.
Credit: World Wildlife Fund

Below: Schoolchildren in Cambodia participate in an Asian elephant conservation education program.
Credit: Wildlife Alliance

to come. However, many of these programs do not occur on a regular and consistent basis due to high demand for education programs and limited availability of funds.

In order for conservation education to have a significant impact on the younger generation, the incorporation of environmental education into the



Future Actions: COMBATTING POACHING

Right: Law enforcement personnel burn illegal poaching equipment that was confiscated.

Credit: USFWS



Poaching of elephants for ivory as well as skin, teeth, and other body parts, poses a serious threat to the survival of Asian elephants and has a very negative influence on the sex ratios among Asian elephant populations. Nearly all Asian elephants that have tusks are male; it is rare to see a female Asian elephant with large tusks. As a result, many wild Asian elephant males have been poached for their ivory, leading to a drastic decline of males in the wild.

Without Asian elephant males in the wild, reproduction of elephants drops. Combating poaching of Asian elephants requires a multi-disciplinary approach. Not only do education campaigns need to be carried out, but law enforcement must be stepped up. Currently, the AsECF supports several effective law enforcement activities; however, the prosecution of offenders must be complete and consistent. It is not enough to confiscate the animal parts and warn the offender. It is essential that conservation organizations and governments follow through with convicting the offender so that the risks

of poaching elephants outweigh the benefits.

The demand for elephant parts drives the killing of Asian elephants. Demand reduction must be addressed through educational campaigns and increased law enforcement. There must also be stronger cross-border coordination and collaboration so that countries can put a stop to illegal wildlife trade.

Currently in Thailand, it is not against the law to trade or sell ivory from captive elephants. This law provides an easy loophole for poachers to facilitate the trade of wild ivory without getting caught. Range country governments should strongly consider working to close these loopholes so the issue of Asian elephant conservation and eradication of elephant poaching is taken seriously.

Project Sustainability

THE ASIAN ELEPHANT CONSERVATION FUND RECOGNIZES THAT LONG-TERM CONSERVATION EFFORTS MUST BENEFIT BOTH ASIAN ELEPHANTS AND LOCAL COMMUNITIES

Whenever and wherever a project is developed, "sustainability" should always be given serious consideration. Sustainability is not solely limited to sources of funding, but also includes important aspects such as the long-term viability of efforts continuing beyond the life of the specific project, the importance of the area with respect to elephant populations, biodiversity, and ecosystem health. Applicants could explore the use of the AsECF to leverage other non-traditional sources of funding for potentially innovative approaches to wildlife and habitat conservation efforts; for example public health and rural literacy initiatives combined with Asian elephant conservation efforts.



Left: Baby elephant "Punky" in Yala National Park, Sri Lanka.

Credit: Centre for Conservation and Research

Appendix I: Program Partners 2002-2011

The following list includes all organizations, individuals and institutions that have received conservation funding support from the Asian Elephant Conservation Fund during fiscal years 2002-2011. For more information on how to become a grantee, please check the website, <http://www.fws.gov/international>.



Right: Western Forest Complex, Thailand.

Credit: USFWS

A Rocha India
www.arocha.org

AARANYAK
www.aaranyak.org

Ashish Chandola
www.wildvistas.com

Asian Elephant Support
www.asianelephantsupport.org

Asian Nature Conservation Foundation
www.asiannature.org

Association Elefantasia
www.elefantasia.org

Beijing Normal University
www.bnu.edu.cn

Biodiversity and Elephant Conservation Trust
www.elephantsinsrilanka.org

Bombay Natural History Society
www.bnhs.org

Cat Action Treasury
www.felidae.org

Centre for Conservation and Research
www.ccrsl.org

Centre for Environment Education
www.ceeindia.org

CITES
www.cites.org

Clemson University
www.clemson.edu

Community Conservation, Inc.
www.communityconservation.org

Conservation Himalayas
www.conservationhimalayas.com

Below: A herd of elephants in Kaziranga National Park, India.

Credit: Aaranyak



Conservation International Foundation
www.conservation.org

Conservation Science Initiative

Danau Girang Field Centre
www.cardiff.ac.uk/biosi/facilities/danaugirangfieldcentre

Dolphin Conservation Society
www.wdcs.org

Dolphin Foundation
www.wilddolphin.org

Durrell Institute of Conservation and Ecology
www.kent.ac.uk/dice/

EcoHealth Alliance
www.ecohealthalliance.org

Elephant Care International
www.elephantcare.org

Elephant Forest and Environment Conservation Trust
www.elephantresearch.net

Envirosearch
www.envirosearch.org

Fauna and Flora International
www.fauna-flora.org

Foundation for Ecological Research, Advocacy and Learning (FERAL)
www.feralindia.org

Frankfurt Zoological Society
www.zgf.de

FREELAND Foundation
www.freeland.org

Green Guard Nature Organization
www.greenguardassam.org

HUTAN (Kinabatangan Orangutan Conservation Project)
www.hutan.org.my

Indo-Myanmar Conservation (IMC)
www.indomyanmar.org



Above: An elephant drive in Sri Lanka.

Credit: Centre for Conservation and Research

Indonesian International Rural Agricultural Development Foundation - INI RADEF

International Elephant Foundation
www.elephantconservation.org

International Fund for Animal Welfare, Inc.
www.ifaw.org

International Rhino Foundation
www.rhinos-irf.org

Lalith Seneviratne

Leuser International Foundation
www.leuserfoundation.org

Nature's Foster
www.naturesfoster.org

Oregon Graduate Institute
www.ohsu.edu

Primate Research Centre

Pondicherry University
www.pondiuni.edu.in

Quang Nam Forest Protection Department, Vietnam

RARE Center for Tropical Conservation
www.rareconservation.org

Reproductive Health for the Quality
of Life Development Association of
Thailand (HAT)

Rhino Foundation for Nature

Riddle's Elephant and Wildlife
Sanctuary
www.elephantsanctuary.org

Samrakshan Charitable Trust
www.samrakshan.org

Save the Elephants
www.savetheelephants.org

The School of Desert Sciences
<http://fsdinternational.org/node/1018>

Simao Prefecture Forestry Bureau,
China

Smithsonian Institution
www.si.edu

Sri Lanka Wildlife Conservation Society
www.slwcs.org

Sumatran Elephant Foundation
(YaGaSu)



Above: A mahout (elephant caretaker) walks with his elephant and her calf in Tangkahan, Sumatra, Indonesia

Credit: USFWS

Surya-thapa Surakum Eksanth
Sanvidanaya

Ugyen Wangchuk Institute for
Conservation and Environment
www.uwice.gov.bt

University of California
www.universityofcalifornia.edu

University of Malaysia Sabah
www.ums.edu.my

University of Minnesota
www.umn.edu

University of Peradeniya
www.pdn.ac.lk

University of Pennsylvania
www.upenn.edu

Veterinary Society for Sumatran Wildlife
Conservation (VESSWIC)
www.vesswic.org

Victoria University of Wellington
www.victoria.ac.nz

WildAid, Inc.
www.wildaid.org

Wildlife Areas Development and
Welfare Trust (Assam)

Wildlife Conservation Society
www.wcs.org

Wildlife Information Liaison
Development Society

Below: An elephant cools off in the water, Sumatra, Indonesia

Credit: USFWS



Left: An adult female elephant in Sabah, Borneo, Malaysia

Credit: USFWS

Wildlife Research and Conservation
Society
www.wracs.co.in

Wildlife Society of Orissa
www.wildlifeorissa.org

Wildlife Trust of India
www.wti.org.in

The World Conservation Union (IUCN)-
SSC Asian Elephant Specialist Group
www.iucn.org

World Wildlife Fund
www.worldwildlife.org

Zoologist Have Kobenhavn
(Copenhagen Zoo)
www.zoo.dk

Zoo Outreach Organization
www.zooreach.org

Zoological Society of London
www.zsl.org

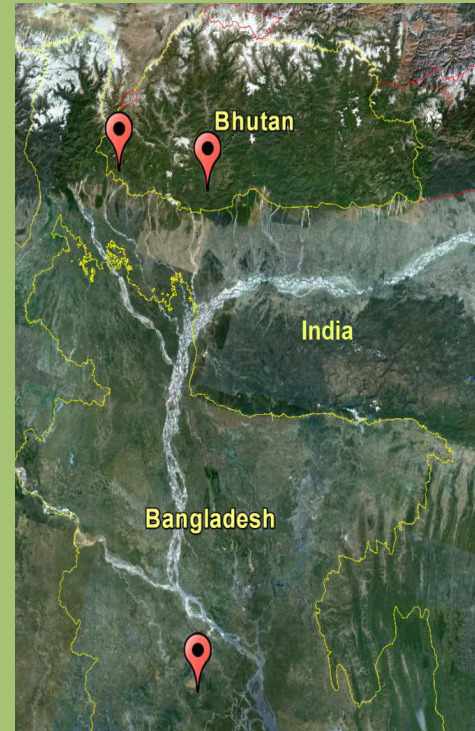
Appendix II: Projects by Region 2002-2011

SOUTH ASIA

1. Bangladesh

Action Research for Conservation of Asian Elephants in Bangladesh, The World Conservation Union (IUCN)-Bangladesh, FY 2002, FY 2004, FY 2006 & FY 2010 Amount Awarded: \$223,845, Leveraged Funds: \$94,920

Conducted a survey to identify all known and possible elephant populations in Bangladesh which can then be illustrated on maps. Worked with governmental, local, and non-governmental groups to identify and prioritize the mitigation threats and methods for raising awareness in order to ensure the long-term survival of the elephant populations in Bangladesh.



2. Bhutan

Building Local Capacity for Asian Elephant Research through Hands-on Training: A Workshop in Bhutan, Ugyen Wangchuk Institute for Conservation and Environment FY 2010 Amount Awarded: \$24,310, Leveraged Funds: \$155,935

Held a workshop and developed hands-on capacity for Bhutanese and other Asian participants to learn wildlife conservation research techniques. Established a wildlife genetics laboratory in Bhutan and also produced a handbook of practical protocols for conducting conservation research of elephants and other wildlife in remote rugged landscapes.

Conservation of the Asiatic Elephant in Bhutan, World Wildlife Fund, Inc., FY 2008 Amount Awarded: \$69,570, Leveraged Funds: \$24,075

Trained 20 field staff on elephant survey techniques. Population surveys estimated around 496 elephants inhabit 482 miles in Samtse and Sarpang districts. Built 2.7 miles of solar-powered fencing along the border of Senge village. Assessed, mapped, and demarcated habitat of 8 elephants in Gedu, as well as monitored their health, movement, and habitat. Replaced and maintained 1.6 miles of solar-powered fencing in Tashithang village and trained 16 farmers in how to maintain solar fences.



3. India*

Andhra Pradesh

The Population, Distribution, Habitat and Problems of the Asian Elephant (Elephas maximus) in Andhra Pradesh, India, Including an Assessment of the Causes for their Migration from the Hosu-Dharmapuri Forests of Tamil Nadu into Andhra Pradesh, India, Bombay Natural History Society, FY 2004 & FY 2006 Amount Awarded: \$73,427, Leveraged Funds: \$32,327

Around 12 elephants occupy the area in and around Koundinya Wildlife

**Projects organized by province*

Sanctuary. Several recommendations were made to the Forest Department to enhance elephant habitat and to work with the local surrounding communities to prevent further erosion and fragmentation of habitat. An estimated 277 elephants are residing in the Hosur-Dharmapuri forest division and 13 elephants are in Koundinya Wildlife Sanctuary. Documented the severe degradation of forest cover in many elephant areas and a decline in preferred food plants for elephants. Intensive grazing by livestock has resulted in the proliferation of unpalatable plant species.



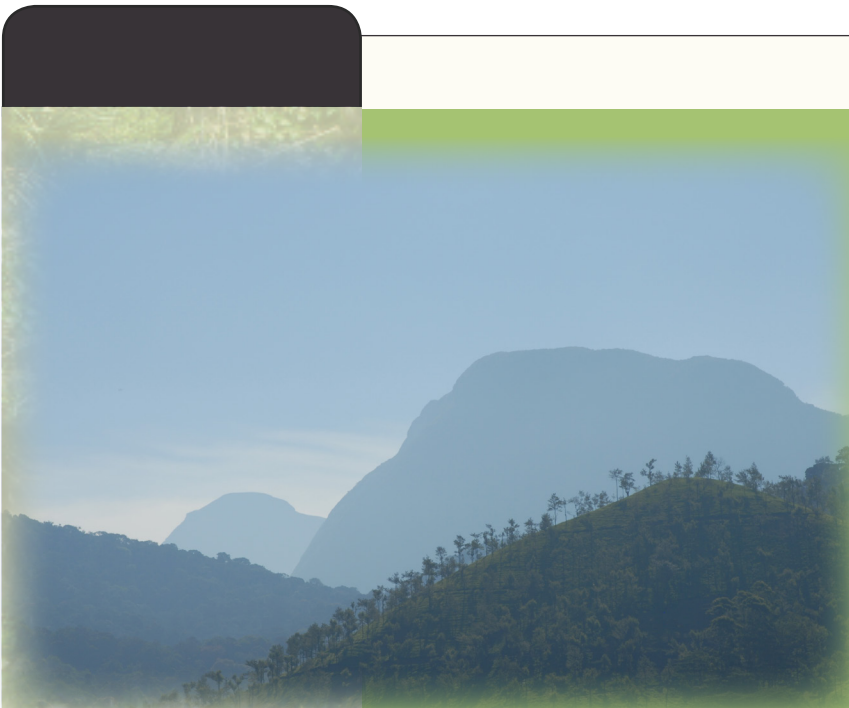
Above: Wild elephant herd in China.

Credit: International Fund for Animal Welfare

Below: A male elephant walks along a road in Kaziranga National Park, India.

Credit: Aaranyak





Above: Elephant habitat in Paro and Valparai, India.
Credit: USFWS



Below: A wild elephant calf and its mother, China.
Credit: International Fund for Animal Welfare



Assam

Efforts to Decrease Human-Elephant Conflict, Wildlife Areas Development and Welfare Trust, FY 2002 Amount Awarded: \$66,518, Leveraged Funds: \$60,933

In partnership with the local community, an eight mile section of electric fence was constructed to decrease human-elephant conflict at Dehingmukh Reserved Forest. The Assam Forest Department and local villagers regularly monitored and maintained the fence.

Conservation of Asian Elephants by Mitigating Human-Elephant Conflict in Sonitpur District of Assam, India, World Wildlife Fund-India, FY 2005 & FY 2011 Amount Awarded: \$113,274, Leveraged Funds: \$126,414

Established and implemented a human-elephant conflict mitigation strategy in the Sonitpur district of Assam for the first time and supplied local communities with tools to mitigate human-elephant conflict. Utilized captive "Kunki" (trained) elephants to drive wild elephants back into forested lands from crop fields.

Mitigation of the Human-Elephant Conflict at the Fringe of the Burhapahar Hill Range, Wildlife Trust of India/Green Guard Nature Organization, FY 2007 & FY 2008 Amount Awarded: \$54,308.60, Leveraged Funds: \$37,712

Developed and installed early warning systems that warn villagers that an elephant or herd is in the area so that the villagers can better mitigate human-elephant conflict and tested elephant repellent crops as natural barriers in human-elephant conflict prone areas.

Studies of Developing a Predictive Model for Human-Elephant Conflicts (HEC) Mitigation in India, Clemson University, FY 2008 Amount Awarded: \$28,479.13, Leveraged Funds: \$36,112

Arunachal Pradesh

Status, Distribution, Conservation and Human-Elephant Conflict in Pakke Wildlife Sanctuary, Arunachal Pradesh, and Adjacent Areas of Assam, India, Wildlife Trust of India FY 2004 Amount Awarded: \$55,000, Leveraged Funds: \$9,494

In collaboration with the Arunachal Forest Department, gained a comprehensive understanding of the elephant population and habitat and evaluated the extent of human-elephant conflict through village visits to support elephant conservation in the Kameng Elephant Reserve.

Trained 10 local youth to survey villagers near elephant habitats and worked to foster a conservation ethic in the Goalpara District of Assam to monitor human-elephant conflict.

Conserving Asian Elephants by Minimizing the Threat of Retaliatory Killings by the People Affected by Elephant Depredation in the Fringe Areas of Manas National Park, Assam, India, Dolphin Conservation Society, FY 2005 Amount Awarded: \$51,300, Leveraged Funds: \$12,130

Trained people on anti-depredation and survey procedures, developed an effective elephant raid prevention system, and introduced small scale community support programs.

Easing Human-Elephant Conflict through Strengthening of Forest Department and Community Interface & Capacity Building and Infrastructure Development of Wildlife Genetic Laboratory in Golaghat District and Adjoining Areas of Karbi-Anglong, AARANYAK, FY 2005, FY 2008 & FY 2010 Amount Awarded: \$81,580, Leveraged Funds: \$21,390

Formed four groups consisting of members of families whose main provider has been killed by an elephant and trained them to live on alternative livelihood practices. The Assam Forest Department estimated



Above: A group of Bornean elephants.
Credit: World Wildlife Fund



Above: A group of elephants in the Sameria area of Hosur-Dharmapuri, India, which is rich in bamboo and water resources.
Credit: Bombay Natural History Society

200-250 elephants in Golaghat and adjoining areas. Collaborated with expert conservation geneticists in the expansion and infrastructure development of a wildlife genetics laboratory as well as trainings for biologists working in the lab.

Construction of Anti-Poaching Camps in Nambor North and Doigrung R.F.'s, Wildlife Areas Development and Welfare Trust, FY 2002 Amount Awarded: \$33,381, Leveraged Funds: \$108,874

Constructed three permanent anti-poaching camps at specific locations in the Assam forests under the supervision of the Assam Forest Department. Stationed a minimum of five Assam forest department personnel at these camps continuously in order to reduce encroachment, halt poaching, and mitigate human-elephant conflict.

Creation of Infrastructure for Conservation of Asian Elephants in Kaziranga National Park, Wildlife Areas Development and Welfare Trust, FY 2002 & FY 2006 Amount Awarded: \$94,610, Leveraged Funds: \$129,347



Above: An anti-poaching patrol camp in India.
Credit: USFWS

Constructed five permanent anti-poaching camps and watchtowers to help park staff successfully minimize poaching and manage Kaziranga National Park's elephants, rhinos, tigers, and other important wildlife and their habitats.

Floating Anti-Poaching Camp in Kaziranga National Park, Assam, India, Rhino Foundation for Nature, FY 2007 Amount Awarded: \$46,376, Leveraged Funds: \$15,917

Constructed a floating anti-poaching camp on a boat to operate along the large tract of the Brahmaputra River to patrol the river. From this floating camp, patrol staff will use smaller country boats to patrol the narrower aspects of the river and carry out their law enforcement activities.

Breaking the Back of Illegal Logging and Beginning to Bring the Manas Biosphere to its Former Potential: Expanding the Large Mammal Corridor & Creating Community Education Destinations for Ecotourism, Community Conservation, Inc., FY 2007, FY 2008, FY 2009 & FY 2011 Amount Awarded: \$178,040, Leveraged Funds: \$537,170

Provided financial support to the Bodoland Forest Protection Force (BFPF) to increase their numbers and patrolling area. Created a federation of community forest protection forces in order to be effective in protecting the Manas Biosphere Reserve in Assam, India, which is home to Asian elephants, Bengal tigers, rhinoceroses and several other endangered species. Created a rural ecotourism/education center in two Reserve Forests of the Manas Biosphere Reserve.

Save Elephant by Empowering Community (SEEC): A Study of Habitat Utilization Patterns of Asian Elephants, Current Status of Human Elephant Conflict & Conservation through Research, Education, and Community Participation in Manas National Park within Chirang Ripu Elephant Reserve, Assam, Aaran Aaranyak, FY 2005, FY 2007 & FY 2010 Amount Awarded: \$145,384, Leveraged Funds: \$36,086

Conducted population surveys and human-elephant conflict mitigation trials in 10 villages. Members of the Manas Sousi Khongkhor Ecotourism Society (MSKETS), who have been involved in patrolling and protecting the forest since their inception, were given training about wildlife and vegetation identification and GIS systems. These patrol teams also confiscated prohibited items such as animal parts and knives, and record illegal activity, such as logging, in the protected area. Many of the members in the patrol groups are ex-loggers and ex-poachers. A nursery program, which involved a local youth group, taught students and local communities about how to sustainably grow trees, specifically fruit-bearing trees. Human-elephant conflict in the area has increased and in the last year, six people (more than half of which were children) were killed by elephants who were raiding crop fields. One elephant was killed by an electric fence.

Conservation of Elephants (*Elephas maximus*) in and around Gibbon Wildlife Sanctuary in Assam, India, Primate Research Centre, FY 2006 Amount Awarded: \$37,347, Leveraged Funds: \$15,460

Conducted population surveys and 47 elephants were counted from six direct sightings in and around the sanctuary. Conducted vegetation surveys and monitored elephant movements. Areas surrounding this small sanctuary are almost entirely encroached by human settlements.

Capacity Building of Field Forest Staff of Kaziranga National Park, Wildlife Trust of India, FY 2005 Amount Awarded: \$49,200, Leveraged Funds: \$9,100

Increased the operational efficiency of the forest staff of Kaziranga National Park by providing anti-poaching training to the staff and by distributing a basic kit (including backpack, flashlight and batteries, raingear, shoes, sleeping bag and mat, water bottle and cap) to an estimated 550 individuals.

Training and Exposure Trip to Protected Area Staff of Bodoland Territorial Council for Strengthening Protection and Wildlife Management, AARANYAK FY 2009 Amount Awarded: \$52,400, Leveraged Funds: \$9,090

Built the capacity of local park staff from Manas National Park in Assam, India, by enabling experience sharing and exchange of knowledge of local frontline staff with field staff from other protected areas in north and northeastern India. Park staff were trained in wildlife monitoring, GIS, data collection methods, and wildlife law enforcement methods, including generating offense reports and lists of animal parts that were seized.

Maintaining Continuity of Community Protection for the Manas Biosphere Reserve and the Chirang-Ripu Elephant Reserve, Nature's Foster



Left: A young male elephant visits a guest house during the night in Nagarhole, India.
Credit: USFWS

FY 2010 Amount Awarded: \$49,467, Leveraged Funds: \$83,000

Restore Asian elephant habitats in the Ripu-Chirang reserve within the Manas Biosphere Reserve. Provided financial support to 100 forest protectors, obtained a vehicle for community patrolling, monitor wild elephant and other wildlife movements, and continued to build local capacity for community co-management of the reserve.

Healthcare and Management of Elephants Engaged in Conservation Activities in Protected Areas in Assam, India, Aaranyak FY 2010 Amount Awarded: \$37,620, Leveraged Funds: \$5,600

Improved husbandry and management of captive elephants working in protected areas, helped train field veterinarians on health care and management of Asian elephants, and provided veterinary expertise to the Forest Department in the management of protected areas.

Conserving through Community: Strengthening the Protection of Chirang-Ripu Elephant Reserve, Assam, by Adopting an Inclusive Approach of Community Participation in Protection, Conservation Education, Capacity Building and Extensionism, Primate Research Centre/The School of Desert Sciences, FY 2007 & FY 2010 Amount Awarded: \$63,503, Leveraged Funds: \$107,300

Supported conservation of Asian elephants in their natural habitat at Chirang-Ripu Elephant Reserve in Assam, India, through community involvement, conservation education and awareness campaigns, and promotion of sustainable livelihoods. 100 Reserve protection volunteers received field uniforms, bicycles, and flashlights in order to better patrol the Reserve. The cattle around Manas National Park were also vaccinated in order to prevent the spread of livestock diseases to elephants and other wildlife.

Community Integrated Approach of Conserving Asian Elephant Habitat in Manas Reserve Forest in the Western Part of Manas Tiger Reserve of Assam, India, Dolphin Foundation, FY 2008 Amount Awarded: \$52,575, Leveraged Funds: \$14,078

Promoted alternative sustainable livelihoods and resource use practices for forest dependent communities adjacent to Manas National Park and Manas Reserve Forest. Provided support to the human-elephant conflict mitigation efforts that have been ongoing in the area as well as conducted workshops to involve community participation.

Strengthen the Protection Measures by Involving Fringe Villagers and by Improving Departmental Elephant Care for Faster Mobility of Frontline Forest Staffs in Manas National Park for the Conservation of Asian Elephants, Wildlife Areas Development and Welfare Trust, FY 2006, FY 2008, FY 2009, FY 2010 & FY 2011 Amount Awarded: \$351,653, Leveraged Funds: \$534,668

Partnered with state Forest Department and the fringe villagers to conserve elephants in their natural habitats by providing salary support for 50 frontline volunteers every year from the fringe villages and facilitated conservation training. Also provided care for 34 Forest Department elephants that are used for patrolling the park and

provided nine boats and 80 bicycles to the Park staff for patrolling.

Karnataka

Mitigation of Human Elephant Conflict in Affected areas of Northern Karnataka, India, Wildlife Research and Conservation Society FY 2010 Amount Awarded: \$38,649, Leveraged Funds: \$31,160

Mitigated human-elephant conflict by strengthening the capacity of the local community and the Forest Department in conflict mitigation techniques in affected areas, with the involvement of local farmers.

A Study of Human-Elephant Conflicts in Rajiv Gandhi National Park and Surrounding Areas of Kodagu District in Karnataka State, India, Envirosearch, FY 2004 Amount Awarded: \$5,000, Leveraged Funds: \$15,840

Human-elephant conflict mitigation techniques were evaluated and indicated that community initiatives based on cooperative efforts to control crop damage were more effective than individual efforts, and barriers were only effective when they provided elephants a large enough home range.

Conservation of Asian Elephants through Mitigation of Human-Elephant Conflict in Bannerghatta National Park, Southern India, A Rocha India, FY 2006 Amount Awarded: \$49,680, Leveraged Funds: \$26,925

Evaluated the extent and nature of human-elephant conflicts around Bannerghatta National Park by assessing cropping patterns and damage from elephants and resulting economic loss. Conducted a detailed survey of elephant population as well as a detailed assessment of elephant deterrents in the area.

An Assessment of the Population, Distribution and Conservation Issues of the Asian Elephant *Elephas maximus* in the Eastern Ghats Areas of Karnataka State, India, Bombay Natural History Society FY 2009 Amount Awarded: \$32,304, Leveraged Funds: \$36,735

Documented the population and distribution of elephants using transect and dung counts, assessed past and present vegetation cover of the elephant habitats using topographic maps and satellite images, and documented past and present incidences of human-elephant conflict from information obtained through the local Forest Departments and by interviewing local villagers, to see if there is decline or increase as well as reasons for them.

Diet and Habitat Use by Elephants in Response to the Weed *Lantana camara* in Bandipur Tiger Reserve, South India, The Research Trust of Victoria University of Wellington, School of Biological Sciences FY 2009 Amount Awarded: \$11,244, Leveraged Funds: \$13,053

Conducted a study on habitat and eating habits of elephants in regards to the weed, *Lantana camara*. Results suggested there is a great quantity of Lantana across the protected area landscape and that elephants did not utilize the landscape if the abundance of Lantana was high.

Functional Connectivity for Large Mammals in the Southern Western Ghats, India: Linking Movement and Distribution, Foundation for Ecological Research, Advocacy and Learning FY 2011 Amount Awarded: \$49,809, Leveraged Funds: \$55,766

Monitored habitat to identify small-scale movement corridors and determined where the elephant hot spots are located in order to aid corridor research and restoration.

Conservation Outreach for Asian Elephants in the Western Ghats, India, Wildlife Conservation Society FY 2010 Amount Awarded: \$44,221, Leveraged Funds: \$44,262

Educate key policy and decision makers to enable them to make decisions that are compatible with elephants and their habitat and also facilitated their long-term conservation in Karnataka state. Worked with the government to support genuine pro-conservation measures and ensure that these measures are implemented efficiently in the field.

Kerala

In Control of Wild Elephant Extrusions into Inhabited Areas in and Around Kurichiat Wildlife Refuge of Wayanad Wildlife Sanctuary, Kerala State, India, Wildlife Trust of India, FY 2004 Amount Awarded: \$48,758, Leveraged Funds: \$50,000

A 4-wheel drive vehicle was purchased for the local forest department to use for their field work. Electric fences were built and an anti-poaching camp was constructed in Kurichiat Wildlife Refuge.

Enhancing Anti-Poaching Activities and Improving Elephant-Human Conflict Mitigation Measures in Neyyar and Pappara Wildlife Sanctuaries in Kerala, India, Wildlife Trust of India, FY 2004 Amount Awarded: \$26,668, Leveraged Funds: \$19,529

Anti-poaching camps were erected at two sites, Plat and Varayatmudi. Two small row boats were purchased for anti-poaching activities and given to

Below: A male elephant in Kui Buri National Park, Thailand.
Credit: World Wildlife Fund



Below: A male elephant shakes off dust in Kaziranga National Park, India.
Credit: Aaranyak





Above: A herd of elephants in Kerala, India, during the summer.

Credit: Kerala Forest Department

Peppara Wildlife Sanctuary and Neyyar Wildlife Sanctuary.

Enhancing Anti-Poaching Activities and Improving Elephant-Human Conflict Mitigation Measures in Aralam Wildlife Sanctuary in Kerala, Wildlife Trust of India, FY 2004 Amount Awarded: \$36,638, Leveraged Funds: \$19,960

Constructed three anti-poaching camps in Aralam Wildlife Sanctuary. Provided support by purchasing a vehicle for the Forest Department personnel.

Pheromones as Aids in Prevention of Crop Raiding by Asian Elephants in Range States, Oregon Graduate Institute, FY 2002 Riddle's Elephant and Wildlife Sanctuary, FY 2003 & FY 2004 Amount Awarded: \$95,488, Leveraged Funds: \$94,000

Prepared olfactory-based deterrents that were enhanced with "musth" chemicals and placed in electric fence regions where frequent elephant break-ins

occur in order to analyze the different ways to mitigate human-elephant conflict.

Emerging Diseases in the Single Largest Asian Elephant Population, Nilgiri Biosphere Reserve, South India, Asian Elephant Support FY 2010 Amount Awarded: \$25,905, Leveraged Funds: \$45,065

Identified emerging diseases and their prevalence in Asian elephants and attempted to determine their impact for future long-term conservation. Objectives and activities included assessing stress levels in the population and monitoring elephants for disease.

Elephant Corridors of the Nilgiri Biosphere Reserve: Location, Threats, and Management, Pondicherry University FY 2011 Amount Awarded: \$38,101, Leveraged Funds: \$10,333

Produced a base-line record of elephant habitat in the region and location of elephant corridors based on past records; assessed the present condition of corridors in order to develop a regional management plan for conservation.

Meghalaya

Anti-Poaching Support to Nongkyllem Wildlife Sanctuary in Meghalaya, India, Rhino Foundation for Nature, FY 2004 Amount Awarded: \$35,710, Leveraged Funds: \$6,100

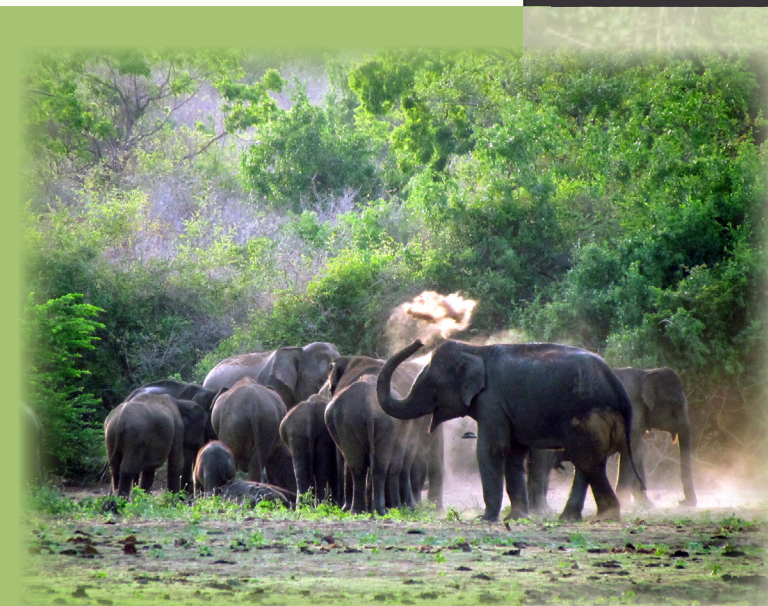
Assisted anti-poaching initiatives by providing a vehicle, wireless system, solar charger, and patrolling gear for rangers and also aided in the construction of an anti-poaching camp.

Evaluating Habitat Use and Population Status of the Asian Elephant in Garo Hills Elephant Reserve, Meghalaya, India, Wildlife Conservation Society FY 2010 Amount Awarded: \$50,174, Leveraged Funds: \$57,407

Used standardized field and analytical methods to reliably identify individual elephants, estimate elephant populations in Garo Hills Elephant Reserve, evaluate importance and functionality of existing corridors, and identify ecological and anthropogenic factors influencing elephant habitat use.

Community Based Conservation of Important Elephant Habitats in the Northeast Indian State of Meghalaya, India: Involving the Local Community in Elephant Conservation Through Livelihood Security, Samrakshan Charitable Trust, FY 2004, FY 2006 & FY 2009 Amount awarded: \$169,963, Leveraged Funds: \$99,276

Worked with local communities to protect elephant habitat and retain linkages between the Balpakram National Park and the Baghmara Reserve Forest. Developed community-based conservation of vital elephant



Above: A group of elephants in Sri Lanka.

Credit: Centre for Conservation and Research

habitats in the Garo Hills by supporting better management of agricultural lands and ensuring the livelihood security of local villagers.

Orissa (Odisha)

Reduction of Human-Elephant Conflict in Orissa through Change of Land Use and Cropping Pattern, Wildlife Society of Orissa FY 2002 & FY 2004 Amount Awarded: \$77,134, Leveraged Funds: \$40,324

Identified four villages in Athgarh and Dhenkanal Forest Divisions in Orissa, India that are subject to intense human-elephant conflict and developed solutions to help mitigate this conflict. Alternative crops were provided to farmers in two experimental villages, Khajuria and Kanaka. In Kanaka elephant raids into crop fields primarily occurred during October, and most of the raiding elephants were females. In Khajuria, most of the elephant raids into crop fields were also in October, and raiding elephants included a male, female, and two calves.

Above: Elephants pass through a village enclave in the Hosur-Dharmapuri Area, India.

Credit: Tamil Nadu Forest Department

Right: A wild male elephant walks through the forest, Sabah, Borneo, Malaysia.

Credit: USFWS

Tamil Nadu

Human Elephant Coexistence HECx: Educator Training Workshops in Tamil Nadu, India, Zoo Outreach Organization FY 2011 Amount Awarded: \$84,660, Leveraged Funds: \$16,050

Train about 120 key educators, managers, volunteers, and community heads to bring about attitudinal and behavioral changes in people living in or near elephant habitat to avoid confrontation and conflict and promote peaceful coexistence between humans and elephants.

The Elephant Hills: Conservation of Wild Asian Elephants in a Landscape of Rainforest Fragments and Plantations Within the Anamalais, Nelliampathy, and Palani Hills, India, Asian Nature Conservation Foundation, FY 2002, FY 2004 & FY 2007 Amount Awarded: \$112,124, Leveraged Funds: \$62,444

Three herds (41 elephants) used the area during the project period. There were 157 human-elephant conflict events over one year, resulting in one human death, one elephant death, and a monetary loss of about \$18,000USD. With elephant, agriculture, and human

welfare experts as well as local villagers, a strategic action plan was formulated for human-elephant conflict mitigation in India.

Strategies for Improving Protection Measures for the Elephant Reserve of Mudumalai Sanctuary and Adjoining Forest Divisions of the Nilgiri Biosphere Reserve with Special Reference to Corridors by Community Participation in Tamil Nadu, Southern India, World Wildlife Fund-India, FY 2004 & FY 2005 Amount Awarded: \$142,751, Leveraged Funds: \$107,066

Trained 206 field personnel, which included 131 Forest Guards, 44 Foresters, 26 Forest Range Officers and 5 Assistant Conservator of Forests from 22 Forest Divisions, in techniques that enhanced their ability to manage and protect Asian elephants. Worked with local people in these villages to help ensure that their commitment to new livelihoods is less damaging to the environment.

Evaluating Population Enumeration Methods and Human-Elephant Conflict Mitigation Methods in Mudumalai Wildlife Sanctuary and National Park, Tamil Nadu, India, Bombay Natural History Society, FY 2006 Amount Awarded: \$28,749, Leveraged Funds: \$8,466

Conducted population estimations using the line transect method, the dung count method, and the capture-recapture method with individual elephants. Analyzed age by direct sighting and developed a standard method for determining age structure using tracks and dung bolus size.



Uttaranchal (Uttarakhand)

Human-Elephant Conflict (HEC) Mitigation through Capacity Building, Community Outreach and Asian Elephant Conservation Awareness Campaign in the HEC-Affected Areas in Uttarakhand, India, Conservation Himalayas FY 2009 Amount Awarded: \$49,960, Leveraged Funds: \$11,175

Conducted human-elephant conflict mitigation training programs for the frontline staff of the Uttarakhand Forest Department who work in all the eight-forest divisions in Uttarakhand's 280 mile long elephant corridor.

Conservation of the Asian Elephant (Elephas maximus) in Rajaji National Park, Uttaranchal, India, Wildlife Trust of India FY 2003 & FY 2005 Amount Awarded: \$80,097, Leveraged Funds: \$39,300

Improved water sources for park elephants and other wildlife, measured economic loss to humans from crop damage by elephants, and monitored the success of electric fence around the village to minimize human-elephant conflict. To reduce elephant fatalities due to trains, mitigation measures were implemented including signboards in accident-prone areas and joint night patrolling.

Elephant Conservation through Community Outreach Education and Awareness Campaign in the Human-Elephant Conflict Areas in Uttaranchal, India, The School of Desert Sciences, FY 2007 Amount Awarded: \$49,987, Leveraged Funds: \$9,175

Conducted fact-finding mission camps to assess human-elephant conflict on community livelihoods, elephant population, and habitats. Prepared elephant conservation education materials in Hindi and English language for the communities, forest guards, students, and teachers, and mobilized community-based elephant conservation awareness campaigns.



Left: A calf attempts to play with a bird in Yala National Park, Sri Lanka.

Credit: Centre for Conservation and Research

Uttar Pradesh

Mitigation of Elephant Mortalities Due to Train Hits in India: Dudhwa Tiger Reserve, Uttar Pradesh through Conservation Action, Wildlife Trust of India, FY 2009 Amount Awarded: \$41,647, Leveraged Funds: \$6,400

Reduced the instances of elephant and tiger mortality resulting from train hits by identifying critical areas and elephant movement zones. Formal interactions were held between the forest officials and field staff of the Forest Department and rigorous and extensive field surveys were carried out in Dudhwa Tiger Reserve to study the impact of railway on wildlife.

West Bengal

Building Fundraising and Grant Management Capacity for Elephant Conservation in India, International Rhino Foundation, FY 2010 Amount Awarded: \$38,898, Leveraged Funds: \$12,846

Supported two 3-day training workshops in proposal writing, fundraising, and grant management in West Bengal, India. The first session was held in Darjeeling and the second session was held in Kolkata, West Bengal, India. There were 16 participants in the Darjeeling workshop and 15 participants in the Kolkata session.

India - Country Wide

Capacity Building & Equipping Protected Area Field Staff with Anti-Poaching Kits in Selected Elephant Bearing Areas of India, Wildlife Trust of India FY 2004 & FY 2009 Amount Awarded: \$76,999, Leveraged Funds: \$185,169

Improved the operational efficiency of the forest staff by providing 173 staff anti-poaching training, and further boosted their morale by also providing 140 staff with basic field gear such as shoes, raincoats, backpacks, flashlights, water canisters, sleeping pads, a day-pack, jacket, and cap.

Training Indian Wildlife Biologists and Conservationists for Endangered Species Conservation, Wildlife Conservation Society, FY 2009 Amount Awarded: \$39,324, Leveraged Funds: \$40,079

Provided training to four groups of Master's Degree students on eight topics that are critical to conservation of endangered species. The training included classroom lectures, laboratory practicals, and visits to protected areas, such as Bhadra Tiger Reserve. Graduates of the course are presently active in 20 states in India.

Publish Legal Digest on Wildlife Laws and Create Electronic Legal Database, Wildlife Trust of India, FY 2004 Amount Awarded: \$14,740, Leveraged Funds: \$9,300

Published Legal digest of Wildlife Law including cases, statutes, and notifications. The publication was made available to partners in India.

"Perils of an Asian Giant": Conservation & Filmmaking, Ashish Chandola, FY 2002 Amount Awarded: \$64,652, Leveraged Funds: \$96,340

Made a film on several aspects of elephant conservation and management in India including human-elephant

conflict, habitat fragmentation, urbanization effects, elephant mortality causes, government efforts to protect elephants and their habitats, and scientific efforts to study elephants. The film continues to be circulated and broadcasted, which helps to raise awareness about elephants in India.

Experimental Induction of Anti-Predator Behavior in Asian Elephants (*Elephas maximus*) as a Method of Mitigating Crop-Raiding in Southern India, The Regents of the University of California, FY 2010 Amount Awarded: \$40,676, Leveraged Funds: \$28,880

Developed playback noise devices in order to deter elephants from raiding crops in several villages in southern India. The playback devices worked to scare off new elephants that were raiding a specific area of crops for the first time, but were not successful in scaring off elephants that continually raided the same agricultural area. However, when playback devices were used in conjunction with electric fences to deter elephants from coming into agricultural areas, the elephants were less likely to raid the crops as there was more than one barrier to overcome.

Asian Elephant School Education Program, Centre for Environment Education, FY 2002 Amount Awarded: \$50,500, Leveraged Funds: \$9,000

Trained approximately 50 local teachers and 500 students about Asian elephant conservation and developed a teacher's manual. The manual is available in nine Indian languages. Using about 30 NGO's as partners, trained approximately 700 teachers (total) in the 12 states within India to implement and institutionalize the Asian elephant conservation education module.

4. Nepal

Elephant Conservation in Transnational Border of Eastern Nepal, Wildlife Conservation Nepal, FY 2008 Amount Awarded: \$51,082, Leveraged Funds: \$36,005

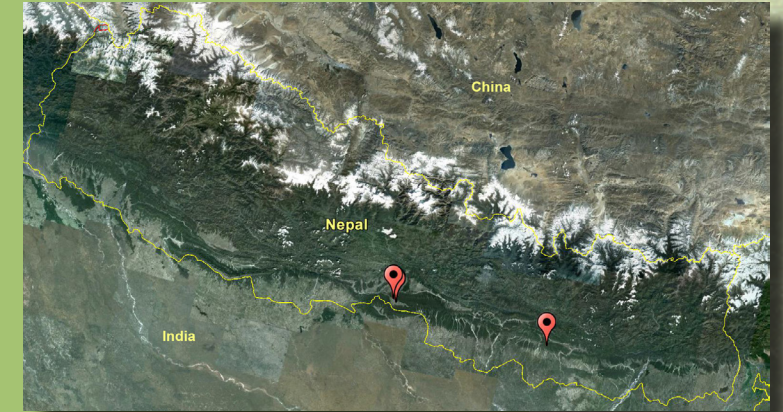
Documented elephant corridors in eastern Nepal as well as status of the forests and lands used by the elephants. Created an overlay of the various landscapes used by elephants and people with a layer of human-elephant conflict areas in the region in order to initiate a dialogue between the villagers and Government officials to start addressing human-elephant conflict.

Mitigation of Human-Elephant Conflict (HEC) in Terai: Piloting a Proactive Approach & Restoration of Trans-boundary Corridors of Wild Elephants in the Western Terai Region of the Terai Arc Landscape, World Wildlife Fund, Inc. FY 2002 & FY 2009 Amount Awarded: \$89,875, Leveraged Funds: \$63,717

Mobilized local communities to mitigate human-elephant conflict in the Chitwan-Parsa Complex of the Terai Arc Landscape. Restored the Basanta Forest Corridor through the development of community forests with local participation. Developed and mobilized six community forest user groups in three village development committees (Hasuliya, Pawera, and Ratanpur).

TB Treatment for Critical Park Patrol Elephants in Chitwan National Park of Nepal, World Wildlife Fund, Inc., FY 2008 Amount Awarded: \$51,581.38, Leveraged Funds: \$11,510

Conducted health checks on approximately 180 elephant caretakers and five veterinary technicians from Chitwan National Park, Bardia National



Park and National Trust for Nature Conservation.

Nepal Elephant Healthcare and Tuberculosis Surveillance Program, Elephant Care International, FY 2008, FY 2009 & FY 2010 Amount Awarded: \$136,761, Leveraged Funds: \$101,166

Mitigated the spread of tuberculosis (TB) to wild elephants by attempting to minimize TB in captive elephants.

Assessment of Status, Population Structure, and Habitat Use of Asian Elephant and Capacity Building of Reserve Staff in Parsa Wildlife Reserve, Nepal, Regents of University of Minnesota, FY 2004 Amount Awarded: \$30,037, Leveraged Funds: \$18,925

Developed a departmental GIS database on seasonal elephant range use and location of human-elephant conflict in order to provide vital information for Asian elephant conservation and management.



Below: A small family of elephants in South Asia. Credit: USFWS

5. Sri Lanka

Establishing a Community Based Electric Fence Program and a Pilot Biological Fence to Mitigate Human Elephant Conflict in the Mahaweli System C in Sri Lanka, Sri Lanka Wildlife Conservation Society, FY 2008 Amount Awarded: \$50,000, Leveraged Funds: \$66,340

In regard to human-elephant conflict in the area, conducted socioeconomic surveys, meetings, discussion, and basic GIS work as well as completed the construction of an electric fence. The Mahaweli Authority allocated 1/2 of an acre to each farmer to develop a home garden and provided them with fruit plants such as banana, coconut, and mango.

To Develop an Elephant Intrusion Early Warning (eleAlert) Fence Monitoring System, Sri Lanka Wildlife Conservation Society FY 2009 Amount Awarded: \$49,980, Leveraged Funds: \$80,776

Monitored electric fences to keep elephants out of crop fields and villages as a means to minimize human-elephant conflict. Developed remote fence post sensors that collect information on status of posts and wires, developed solar powered remote transmitting unit to monitor post sensors and send status report via SMS, and designed a central station that triggers a visual and audible alarm and switches the fence on and off.

Saving Elephants by Helping People: Mitigating Human-Elephant Conflicts along the Southern Boundary of the Lahugala Kitulana National Park for the Long-term Conservation of the Sri Lankan Elephant (Elephas maximus maximus), Sri Lanka Wildlife Conservation Society, FY 2005 Amount Awarded: \$89,989,

Leveraged Funds: \$28,660

Helped to mitigate human-elephant conflict by suggesting that instead of fencing in the elephants within parks, the elephants were fenced "out" of villages, i.e., fences are erected around villages, and the villagers maintain the fences. This approach may be more sustainable both for humans and elephants, giving people a greater stake in the success of the project, and allowing elephants to continue to use lands both within and outside the parks.

Advancement of the Non-intrusive System for Protection against Crop-Raiding by Elephants, Seneviratne, Lalith, FY 2003 Amount Awarded: \$50,405, Leveraged Funds: \$12,500

Developed an elephant infrasound detection, archival, and analysis tool to enable the detection of elephants and help mitigate human-elephant conflict.

Human-Elephant Conflict Awareness Programs in Sri Lanka, Biodiversity and Elephant Conservation Trust, FY 2002, FY 2004 & FY 2005 Amount Awarded: \$92,291, Leveraged Funds: \$9,056

Conducted an Asian elephant environmental education outreach program among 154 schools that are



Above: A male elephant in Uda Walawe National Park, Sri Lanka.

Credit: Centre for Conservation and Research

in the human-elephant conflict areas of Sri Lanka, in close cooperation with the Department of Wildlife Conservation, Ministry of Education, Universities, and other NGO's.

Assessing the Impact of Development and Management Activities on Human-Elephant Conflict and Elephant Conservation in Sri Lanka, Centre for Conservation and Research, FY 2010 Amount Awarded: \$54,956.00, Leveraged Funds: \$20,300

In both the Moragahakanda and Kaluganga areas of Sri Lanka, there are approximately 100 elephants. Human-elephant conflict in the surrounding areas was the result of problem male elephants, and not usually the actions of a collective herd. There was a dramatic rise of human-elephant conflict due to the lack of regular monsoon rains. Without these rains, water sources for both humans and elephants were severely limited and the competition for resources increased. Furthermore, ongoing infrastructure development in the area has severely limited natural elephant habitat which causes elephants to raid villagers crops on a nightly basis. In order to alleviate these issues in this area of Sri Lanka, conservation areas need to be set aside for elephants.

An Enterprise to Elevate a Tenuously-Achieved Human-Elephant Relationship to the Next Level, Surya-thapa Surakum Eksanth Sanvidanaya, FY 2005 Amount Awarded: \$14,140, Leveraged Funds: \$2,650

Promoted eco-tourism where elephants are the main attraction, and the profits generated by eco-tourism were then used by the community to maintain the tripwire protection system to reduce human-elephant conflict.

Saving Elephants by Helping People: Field Scouts Program Promoting a New Paradigm for



Sustainable Conservation, Sri Lanka Wildlife Conservation Society, FY 2004 Amount Awarded: \$33,850, Leveraged Funds: \$25,150

Conducted a field scout program where participants undertook many responsibilities including: direct and in-direct observation of elephants, operation of GPS units, use of binoculars and night vision scopes, and long-term monitoring and surveys of wildlife.

Integrating Elephant Conservation with Economic Development in Sri Lanka, with Particular Reference to the Wannu in the North, University of Peradeniya, FY 2004 Amount Awarded: \$51,030, Leveraged Funds: \$16,040

Determined the size, population structure, seasonal distribution, and abundance of the Wannu elephants. Approximately 350 elephants were identified. An elephant based ecotourism project was developed in order to provide tangible benefits to the fishing village in the Giant's Tank, thus helping to change the perception of the local community about elephants.

Demographic Influences of Social Organization in Elephants and

Above: Elephant sculptures adorn a temple wall in Sri Lanka.

Credit: Centre for Conservation and Research



Above: A group of elephants passes over a stream in Kaudulla, Sri Lanka.

Credit: Centre for Conservation and Research

Devising Strategies for Alternative Human Livelihoods, Elephant Forest and Environment Conservation Trust, FY 2011 Amount Awarded: \$49,883, Leveraged Funds: \$88,995

Conducted identification surveys of elephants within the Uda Walawe National Park and provided necessary data to the Department of Wildlife Conservation, Sri Lanka, to protect the park and sanctuaries. Conducted surveys of households outside the National Park to obtain socioeconomic and livelihood information.

Saving Elephants by Helping People: A Landscape Approach to Integrate Conservation and Development, Sri Lanka Wildlife Conservation Society, FY 2009 Amount Awarded: \$50,000, Leveraged Funds: \$57,100

The Recipient estimated elephant population and distribution, developed GIS maps and optimal land-use strategies, minimized human-elephant conflict (HEC) and developed HEC programs in collaboration with affected people. The recipient conducted participatory and rapid rural appraisals, and conducted base mapping and landscape modeling using GPS, GIS and remote sensing.

Managing Elephants Outside Protected Areas: Radiotelemetric Study of Elephants to Develop and Monitor a Yala Buffer Zone Management Plan, Centre for Conservation and Research, FY 2005, FY 2009 & FY 2011 Amount Awarded: \$164,503, Leveraged Funds: \$241,590

Radio-collared and followed 29 elephants. The study clearly showed that translocating elephants resulted in elephants either returning to their original capture site, or translocating the problem to another location. If they were fenced it resulted in the animal's early death.

The Role of Fire in Maintaining Critical Asian Elephant Habitat in Sri Lanka, Smithsonian Institution, FY 2011 Amount Awarded: \$25,148, Leveraged Funds: \$13,730

Determined whether fires can be used to reduce *Lantana camara* and other shrub invasions into grasslands and whether elephants prefer these areas as habitat at Udawalawe National Park and Hurulu Reserve. Held a two-day capacity building workshop to inform the Department of Wildlife Conservation about the use of fire to manage invasive species and elephant habitat.

Asian Elephant Behavioral Ecology and Individual-Based Demography in Sri Lanka, Trustees of the University of Pennsylvania, FY 2007 Amount Awarded: \$34,909.68, Leveraged Funds: \$15,380

Partnered with the University of Pennsylvania, the University of Colombo, Department of Wildlife Conservation Sri Lanka and others to study the demography and human-



Left: A group of elephants runs across a highway in Hurulu, Sri Lanka.

elephant conflict at Uda Walawe National Park, and trained assistants in gathering field data for demographic studies and GIS techniques.

Developing a Landscape Management Strategy for Elephant Conservation in Sri Lanka, EcoHealth Alliance, FY 2003 Amount Awarded: \$29,820, Leveraged Funds: \$23,910

Conducted research needed to develop a land management plan for the buffer zone of the Yala National Park. Worked with local farmers and the Department of Wildlife Conservation to manage shifting cultivation and other human activities in the buffer zone of the park to provide forage for elephants.

6. Regional: South Asia

Developing and Implementing a Program for the Monitoring of Illegal Killing of Elephants in South Asia, CITES MIKE Program, FY 2003 & FY 2004 Amount Awarded: \$149,000, Leveraged Funds: \$764,400

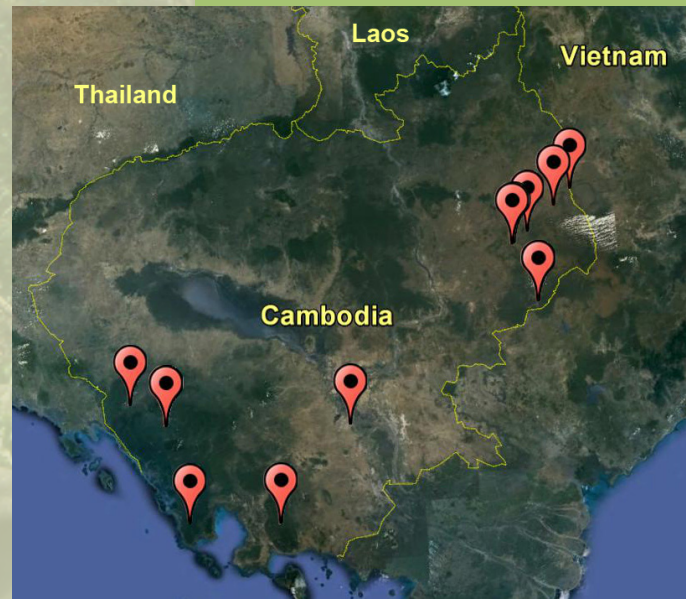
Worked with Project Elephant and other elephant conservation initiatives to provide training in law enforcement monitoring and standardized population monitoring techniques. Implemented field activities at field sites, and provided training in data management and analysis through the use of GPS units and computers.



Left: Two male elephants spar in Uda Walawe National Park, Sri Lanka.

Credit (both images): Centre for Conservation and Research

SOUTHEAST ASIA



and where the elephant hotspots are located.

Strengthening Law Enforcement and Anti-Poaching Units in the Cardamom Mountains, Southwest Cambodia, Conservation International Foundation, FY 2003, FY 2005, FY 2006 & FY 2008 Amount Awarded: \$177,426.57, Leveraged Funds: \$130,526

Strengthened the wildlife law enforcement system from detection to conviction and increased the level of engagement of local communities in wildlife conservation strategies. Capacity building trainings were attended by nearly 250 people from local communities. Incentives were provided for conservation which resulted in communities receiving 128 buffalo, 17 mechanical mules, and financial and equipment support for 11 teachers.

The Bokor Conservation Project: Developing a Model Protection System for Cambodia's Wildlife, WildAid, Inc., FY 2003 & FY 2004 Amount Awarded: \$84,650, Leveraged Funds: \$381,771

Provided wildlife ranger equipment and supported construction of two ranger stations. Items provided include base and handheld radios, GPS units, and laminated maps. Training was also provided for 55 park rangers and one park director. 514 cubic yards of illegally harvested timber were confiscated, 162 illegal charcoal kilns were destroyed, and 53 chainsaws were seized.

Protected Area Management, Patrolling for Law Enforcement, and DNA-Based Monitoring and Research in Areas in Cambodia's Eastern Plains Landscape, World Wildlife Fund, FY 2002, FY 2004, FY 2005, FY 2007 & FY 2008 Amount Awarded: \$361,478, Leveraged Funds: \$650,165

1. Cambodia

Providing Community-Led Solutions and Increasing Capacity for the Royal Government of Cambodia to Conserve and Monitor Elephant Populations and Mitigate Human Elephant Conflict in Cambodia & Assessing Impacts of Hydropower, Extractive Industries, and Agribusiness on Elephants, Fauna and Flora International, FY 2004, FY 2009, FY 2010 & FY 2011 Amount Awarded: \$228,195, Leveraged Funds: \$412,504

Collected important data on Asian elephants in the northern half of the Phnom Samkos Wildlife Sanctuary. Reduced the risk of elephant attacks on villagers between villages Areng and Chi Phat, trained guarding groups and provided human-elephant conflict mitigation tools. Produced land-use maps of Nam Lyr Sanctuary showing the locations of land concessions

Supported construction of two new wildlife ranger stations at Antrong and Sre Khtong and two new field posts at Dei Ey and O Krak, along with ranger field posts strategically located to facilitate monitoring of access to the Sanctuary by local users and outsiders. Established a baseline population estimate for Asian elephants in Phnom Prich Wildlife Sanctuary, Cambodia. The population of wild Asian elephants in Phnom Prich Wildlife Sanctuary is estimated at 136 elephants.

Northern Plains of Cambodia Elephant Conservation Project, Wildlife Conservation Society, FY 2009 & FY 2010 Amount Awarded: \$110,542, Leveraged Funds: \$103,158

Elephant distribution in the Northern Plains was mapped with survey locations and known recent distribution through the collection of dung samples. Rangers were trained in survey protocols developed during surveys of Seima Protection Forest. This has enabled the rangers to successfully complete the survey as well as giving them the potential to carry out similar monitoring surveys in future years. Also gathered information about the genetic diversity of one specific group.

Elephant Conservation and Capacity-Building in Seima Biodiversity Conservation Area, Cambodia, Wildlife Conservation Society, FY 2005, FY 2007, FY 2009, FY 2010 & FY 2011 Amount Awarded: \$276,850, Leveraged Funds: \$326,637

Established a DNA-based survey technique for low density elephant populations. The significance of the elephant population and age and sex structure was determined in southern Mondulkiri, and capacity building among the Cambodian Government staff was supported. The dung DNA analysis identified 116 individual elephants, and the age structure was skewed towards adults.

The Cardamom Mountains Program:

Integrating Elephant Protection and Sustainable Development on a Landscape Scale in Cambodia, Fauna and Flora International, FY 2002, FY 2003, FY 2005, FY 2007, FY 2008, FY 2009 & FY 2011 Amount Awarded: \$327,153.46, Leveraged Funds: \$618,134

In partnership with the Cambodian Ministry of the Environment, conducted anti-poaching training and law enforcement activities in the Phnom Samkos and Phnom Aural Wildlife Sanctuaries. For the first time, a population estimate for elephants in western Cambodia was carried out. The elephant population was estimated at 174 elephants. Completed the building of a Human Elephant Conflict Substation in the Cardamom Mountains and planned to deliver a national workshop to formulate the Cambodian Elephant Strategy & Action Plan.

Community-Based Monitoring and Protection of Endangered Species in Cambodia's Largest Wildlife Areas – Community Wildlife Ranger Program, Cat Action Treasury, FY 2002, FY 2003 & FY 2004 Amount Awarded: \$168,533, Leveraged Funds: \$143,087



Above: Elephant habitat in Cambodia.
Credit: Fauna and Flora International

Right: Schoolchildren in Cambodia plant trees as part of a Kouprey Express Arbor Day Program.

Credit: Wildlife Alliance



Supported the patrolling and wildlife monitoring functions of the Community Wildlife Ranger Program in Monduliri Province and the Cardamom Mountains. Facilitated the creation of partnerships with local law enforcement agencies to enforce forestry and wildlife laws.

Developing a Sustainable Community Approach to Elephant Conservation in Cambodia, Fauna and Flora International, FY 2007 Amount Awarded: \$50,727, Leveraged Funds: \$62,700

Published 3,000 copies of "The Bunong – Caretakers of Cambodia's Sacred Forests" in English and Khmer. Produced, published, and distributed 500 copies of a "HEC Toolbox" amongst farmers experiencing human-elephant conflict. Provided assistance on well building and irrigation and piloted new cash crops to improve income to families negatively affected by HEC.

Trans-boundary Conservation and Monitoring of the Key Elephant Population of Eastern Monduliri Province, Cambodia and Western

Dak Lak Province, Vietnam, Fauna and Flora International-Cambodia, FY 2003 Amount Awarded: \$38,894, Leveraged Funds: \$26,798

Trained and set up HEC Response Teams to be HEC mediators. Produced and translated a book on Buddhist perceptions of wildlife and problems faced by elephants in Cambodia into Khmer and other ethnic languages and helped train and build capacity within the Cambodia Wildlife Protection Office/ Department of Nature Conservation.

The Kouprey Express: Increasing Conservation and Environmental Awareness in Cambodia, Wildlife Alliance, FY 2004, FY 2006, FY 2008 & FY 2011 Amount Awarded: \$211,112, Leveraged Funds: \$377,049

Involved around 10,000 rural children of different ages/grades in interactive educational activities promoting elephant conservation. Provided three hour night shows to local communities to promote the importance of forests, wildlife and forestry laws, and threats to Cambodia's forests. Brought messages from schoolchildren throughout the country to the King of Cambodia asking him to help stop illegal wildlife trade in Cambodia.

2. China (East Asia)

Sharing Space with China's Elephants: Trans Boundary Elephant Population Monitoring and Habitat Conservation, International Fund for Animal Welfare, Inc., FY 2004 & FY 2010 Amount Awarded: \$94,486, Leveraged Funds: \$172,584

Ten herds of 105 elephants were tracked in Xishuangbanna during the first year of monitoring. Wild elephants appeared to prefer bamboo-evergreen broadleaf forest, open bush, and grassland habitats. Elephants also preferred valleys and flat areas and human disturbance appears to affect elephant habitat preference. Developed a tour guide training manual for the Xishuangbanna Nature Reserve in China, with information about elephants and their ecology. Supported the alternative livelihoods of villagers and brought together Protected Area personnel from different regions to develop coordinated elephant conservation strategies.

Establish a Cross Border Protected Area Between China and Lao PDR and Preserve Trans Boundary Asian elephants in Southern China, Beijing Normal University, FY 2008 Amount Awarded: \$50,000, Leveraged Funds: \$65,000

Helped design and establish safe corridors and cross-border protected areas between China and Lao PDR. Helped promote further communication between the protected area management authorities in China and Lao PDR by way of workshops and training.

Integrated Asian Elephant Habitat Conservation and Local Community Development Project in Simao, China, Simao Prefecture Forestry Bureau, FY 2002 Amount Awarded: \$48,000, Leveraged Funds: \$80,000

Created a new protected area for Asian



elephants, developed a monitoring program, conducted environmental education programs, and set up anti-poaching patrol units. Also provided small loans to local communities to develop a diverse rural economy and thus reduce their use of forest products.

Reducing Demand and Raising Awareness in China: A Campaign to Reduce Demand in the World's Largest Market for Endangered Species, WildAid, Inc., FY 2006 Amount Awarded: \$45,211, Leveraged Funds: \$73,225

Partnered with internationally-known basketball star Yao Ming to launch Public Service Announcements in 2006 to reduce demand for endangered species. The project launched a large scale PSA with the star in person in Shanghai and translated announcements into Chinese languages.



Left: Individuals receive training in geospatial technologies and its application for conservation in China.

Credit: Beijing Normal University

Right: The Aceh Conservation Response Units patrol the forest in Lamno, Indonesia.

Credit: Fauna and Flora International



Right: A morning view of Bukit Tigapuluh, Indonesia.

Credit: Frankfurt Zoological Society



3. Indonesia (Sumatra Island*)

Aceh

Human-Elephant Conflict Mitigation in Aceh Province, Indonesia through the Establishment of Conservation Response Units, Fauna and Flora International, FY 2004 & FY 2009 Amount Awarded: \$101,493, Leveraged Funds: \$245,717

The Conservation Response Unit (CRU) concept was established by FFI in 2002 with the belief that effective elephant and forest conservation can only be achieved when forest-edge community needs are explicitly addressed. CRUs use captive elephants to conserve wild elephants and their habitats. The CRU community rangers held 26 village meetings and met with 103 people as well as responding to 164 human-elephant conflict cases. The CRU concept has also demonstrated to be very important for human-elephant

conflict mitigation in the areas of Bengkulu and Tangkahan in Indonesia.

Emergency Support for Elephant Conservation Following the Tsunami Disaster in Aceh, Fauna and Flora International-Indonesia, FY 2005 Amount Awarded: \$63,160, Leveraged Funds: \$44,096

Provided emergency assistance to the provincial conservation department in Aceh Jaya and assisted local individuals to integrate environmental concerns into post-disaster recovery programs. Provided animal welfare support to Aceh's domestic elephants participating in tsunami relief.

Post Conflict Sumatran Elephant Conservation Actions in Aceh Besar Indonesia: Integrating In-situ and Ex-situ programs, Sumatran Elephant Foundation (YaGaSu), FY 2005 Amount Awarded: \$49,580.25, Leveraged Funds: \$20,200

Strengthened the combined experience of NGO, government, and local community capacity to conduct elephant

*Projects organized by province



Above: Participants of a mahout (elephant caretaker) workshop in Aceh, Sumatra.
Credit: FOKMAS

conservation activities in Aceh Besar including biodiversity assessments along the forest elephant corridor in Aceh Besar. Established an elephant conservation site in Jantho Nature Reserve.

Support of Ongoing Veterinary Training in Elephant Health Care and Conservation, Asian Elephant Support, FY 2011 Amount Awarded: \$46,845, Leveraged Funds: \$6,130

Helped build the capacity of Asian elephant range country veterinarians by allowing them opportunities for practical training and experience exchanges. Additionally, a regional veterinary workshop was hosted in Sumatra in collaboration with Veterinary Society for Sumatran Wildlife Conservation and the veterinary college in Banda Aceh.

Community Based Protection of Sumatran Elephant Populations and Habitat in Northern Sumatra through Conservation Response Units (CRU), Veterinary Society for Sumatran Wildlife Conservation, FY 2011 Amount Awarded: \$50,160, Leveraged Funds: \$114,920

Maintained and used captive elephants and trained personnel (Conservation Response Units) to carry out elephant

patrols to monitor wildlife and illegal activities, respond to and assess human-elephant conflict, and developed training and education programs for local communities and forest rangers.

Creating Conservation Constituencies, Building Local Capacity, and Removing Barriers to Behavior Change to Support Sumatran Elephant Conservation, RARE Center for Tropical Conservation, FY 2009 Amount Awarded: \$24,802, Leveraged Funds: \$78,500

The project resulted in behavior change in the community including: (1) 70% of the farmers understood that clearing land for new agriculture is a serious threat to the forest (up from 35%), (2) 60% of farmers became aware of how to respond to elephant disturbance problems by giving reports to relevant institution for follow-up action, and (3) 50% of community members now know how to engage each other in issues of boundary arrangements which can reduce human-elephant conflict.



Top right: Veterinary staff take blood samples from a radio collared elephant in Jambi, Sumatra.

Bottom right: Conservation staff take a break from radio-collaring elephants, Sumatra, Indonesia.
Credit (both images): Frankfurt Zoological Society

Bengkulu

Conserving Elephants in the Bengkulu landscape: Assessing Elephant Conservation Status and Mitigating Human Elephant Conflict, Indonesia, Durrell Institute of Conservation and Ecology, FY 2006, FY 2007 & FY 2008 Amount Awarded: \$215,110, Leveraged Funds: \$50,690

In collaboration with Fauna & Flora International and the Department of Forestry's Natural Resource Conservation Agency (BKSDA)-Bengkulu, established the first formal and scientifically defensible elephant monitoring program for the important elephant range within the Kerinci Seblat region of Bengkulu, Sumatra.

Support of Conservation Response Units (CRU) at the Seblat Elephant Conservation Center in Bengkulu Province, Sumatra, International Elephant Foundation, FY 2005, FY 2007, FY 2008 & FY 2010 Amount Awarded: \$149,570, Leveraged Funds: \$319,625

Conducted the annual mahout (elephant handler) workshops and provided mahouts with knowledge on data collection and recording and field navigation techniques. Also constructed an "interpretive center" which is used as an educational tool for the mahouts and the general public. Local staff and trained elephants play an active role in protecting the forests and wildlife through the support of Conservation Response Units (CRU). Constant CRU presence in the field deters illegal logging activity in this area and



Above: A male elephant in Bengkulu, Sumatra
Credit: Frankfurt Zoological Society

effectively mitigating human-elephant conflict by using the trained captive elephants to drive wild elephants away from villages.

Sumatran Elephants' Dietary Ecology, Movement and Habitat Use: Using an Ecological Approach to Save Endangered Asian Elephants and their Habitat in Indonesia, Conservation Science Initiative, FY 2007 Amount Awarded: \$49,100, Leveraged Funds: \$72,190

Investigated elephant dietary ecology in various habitat types within Seblat Elephant Conservation Center area and the corridor to Kerinci Seblat National Park.

Left: A group of students learn how to make paper out of recycled materials in Sumatra.
Credit: Fauna & Flora International



Above: Survey teams in Jambi, Sumatra.
Credit: Frankfurt Zoological Society

Jambi

Towards a Peaceful Coexistence between Men and Elephants: Saving the Elephants of Bukit Tigapuluh (Sumatra) with GPS and GIS – a Genetic Population Survey as a First Step, Frankfurt Zoological Society, FY 2010 & FY 2011 Amount Awarded: \$169,267, Leveraged Funds: \$154,092

Collared and tracked five elephants, with GPS collars, to collect information on home range size and habitat usage to determine elephant hot spots and active routes to guide policy making. Used non-invasive genetic techniques to estimate size, sex ratio, and age structure. Updated distribution data of elephants and other mega-fauna in the region and updated information on illegal activities.

Lampung

Living with Elephants: A Micro-Finance Model to Sustain Community Guarding in Human-Elephant Conflict Hotspots around Way Kambas National Park, Sumatra, Wildlife Conservation Society, FY 2009, Amount Awarded: \$39,738,

Leveraged Funds: \$31,908

Combined the development scheme of microfinance with the demonstrated success of community-based human–elephant conflict. The schemes set up included organic farming, fish farming, duck rearing for eggs, and vegetable farming.

Protection of Megafauna (Elephant, Rhino, Tiger and Tapir) by Anti-Poaching Teams (RPU/TPU) in Bukit Barisan Selatan National Park, International Rhino Foundation, FY 2006, FY 2007, FY 2008, FY 2009, FY 2010 & FY 2011 Amount Awarded: \$332,700, Leveraged Funds: \$1,268,364

Partnered with the Indonesian Rhino Conservation Program, the Directorate General of Forest Protection and Nature Conservation and their anti-poaching teams to protect wildlife including elephants, rhinos, tigers, and tapirs, and their habitats in Bukit Barisan Selatan National Park by developing eight anti-poaching units. In partnership with Wildlife Conservation Society, conducted a training workshop in the use of Management Information System (MIST) protocols to build additional capacity in reporting and use of field collected information to assist with management and field-based protection/patrolling decisions.

Supporting Conservation Management and Human Livelihoods in and around Bukit Barisan Selatan National Park, World Wildlife Fund-Indonesia, FY 2003 & FY 2006 Amount Awarded: \$107,075, Leveraged Funds: \$318,972

Carried out a joint community patrol of Bukit Barisan Selatan National Park. Illegal loggers were caught within the park and coffee trees planted inside the park were also removed. Human-elephant conflict mitigation and monitoring continued near Sekincau and training was provided to market sustainable agricultural products,

especially coffee powder. A provincial workshop was held that was attended by 120 participants.

Sumatra-Wide Elephant Survey, Human-Elephant Conflict Mitigation and Elephant Poaching Reduction Project, Wildlife Conservation Society, FY 2002, FY 2003, FY 2005, FY 2006, FY 2007, FY 2008 & FY 2009 Amount Awarded: \$444,725, Leveraged Funds: \$545,461

In partnership with the Indonesian Ministry of Forestry's Directorate General of Forest Protection and Nature Conservation, initiated low-cost human-elephant conflict mitigation methods at more than 30 new locations outside Way Kambas National Park. The project trained a total of 800 directly affected farmers from 15 self-help groups in mitigation methods during the project period. In 2001, there were estimated to be 498 elephants in Bukit Barisan Park. In 2002, there were estimated to be 180 elephants in Way Kambas Park.

Way Kambas National Park Abandoned Well Closure Project, Indonesian International Rural Agricultural Development Foundation - INI RADEF, FY 2008 Amount Awarded: \$48,828, Leveraged Funds: \$22,500

Two well closure teams were established consisting of a team leader and nine field assistants to close abandoned wells in Way Kambas that can be very treacherous for elephants.



Above: Conservation Response Units (CRU's) patrol the forest in Aceh, Sumatra.
Credit: VESSWIC



Above: Teams work to close abandoned wells in Way Kambas National Park, Indonesia.
Credit: INI RADEF

Three mahouts and their elephants were involved in the process, which successfully closed nearly 2,000 abandoned wells.

Sumatran Elephants and Mahouts Working for Conservation Elephant: Conservation Response Units, Way Kambas/Lampung/Sumatra, Veterinary Society for Sumatran Wildlife Conservation, FY 2010 Amount Awarded: \$58,365 Leveraged Funds: \$60,706

Utilized captive elephants (Conservation Response Units, CRU) to help protect Way Kambas National Park's wild elephants, and reduced human elephant conflict. Activities include rapid response to human elephant conflict with trained CRU captive elephants, patrolling of Way Kambas boundaries, and cross-training of CRU teams/mahouts by study visits to other CRU sites across Sumatra.



Above: Elephant Response Units in Way Kambas, Sumatra, chase wild elephants to prevent them from raiding crops.

Credit: Way Kambas National Park

North Sumatra

Conservation of Asian Elephants and their Habitat through Community Engagement and Empowerment in the Buffer Zone of Gunung Leuser National Park, Fauna and Flora International, FY 2006 & FY 2009 Amount Awarded: \$100,000, Leveraged Funds: \$178,470

Supported the development of community-based ecotourism and alternative livelihoods in Tangkahan, North Sumatra. The number of foreign tourists visiting Tangkahan has continued to increase from 20 visitors in 2004 to 1,200 visitors in 2008-2009, and 1,700 visitors in 2009-2010. Law enforcement patrols were supported by using captive elephants to help monitor forests. Several methods of preventive HEC mitigation were applied by the Conservation Response Units including chili grease ropes and lemon grass cultivation to create an inedible barrier around crops.

Deploying Domesticated Elephants to Help Protect the Habitat of Sumatra's Last Wild Elephant Herd, Leuser

International Foundation, FY 2005 Amount Awarded: \$49,490, Leveraged Funds: \$12,540

Used captive elephants to patrol the Gunung Leuser National Park which reduced illegal logging and poaching and also protected wild elephant habitat. Created public awareness programs and start a revenue generating program by charging visitors a fee to visit Aras Napal Elephant Camp.

Riau

Laying the Foundation for Long-Term, Multi-Stakeholder Elephant Conservation and Management in Riau province, Sumatra, World Wildlife Fund-Indonesia, FY 2009 Amount Awarded: \$49,984, Leveraged Funds: \$45,292

Established action plans for the four key districts that hold the most important elephant populations. Key stakeholders in the conservation and management of elephants in Riau (forestry service, district government agencies and companies) were brought into the program to conserve elephants in each of the nine pouches in Riau.

Achieve Protection of the Largest Remaining Stretch of Sumatran Lowland Forest, the Tesso Nilo Forest in the Province of Riau, Indonesia, as a Safe Haven for Elephants, World Wildlife Fund-Indonesia, FY 2002 Amount Awarded: \$53,990, Leveraged Funds: \$102,648

Carried out awareness campaigns to highlight the importance of the Tesso Nilo Forest and the immediate need for its protection. Illegal and legal activities in the area were documented, including the operation of many illegal saw mills. Domesticated wild elephants, called the Flying Squad, were used to push wild elephants back into the forest to avoid human-elephant conflict.

South Sumatra

Protecting Sumatran Elephant Populations and Resolving Human Elephant Conflicts in Padang Sugihan, South Sumatra, Wildlife Conservation Society, FY 2011 Amount Awarded: \$49,899, Leveraged Funds: \$54,403

Establish village committees and support systems in four village areas in the Padang Sugihan landscape and set up Active Guarding Units (AGU) to organize and motivate village protection systems. The project's long-term goal is to reduce the killing of elephants and other threats to elephants and their habitat that results from human-elephant conflict.



Above: Elephant Response Units in Way Kambas use a sound cannon to scare off wild elephants who cause human-elephant conflict.

Credit: Way Kambas National Park



Left: Frankfurt Zoological Society Elephant Conservation Team in Jambi, Sumatra.

Credit: Frankfurt Zoological Society



Providing Field Veterinary Expertise and Services for Sumatran Elephant Conservation Programs and Activities, Veterinary Society for Sumatran Wildlife Conservation, FY 2009 & FY 2011 Amount Awarded: \$106,500, Leveraged Funds: \$100,782

The number of elephants utilized for conservation activities and programs from the Elephant Conservation Center in Way Kambas and Aceh has continuously increased, thus the need for regular veterinary care of these elephants has also increased. Activities included: routine veterinary health checks and treatments, emergency response, and mahout and local veterinarian training.

Above: Conservation Response Units in Aceh, Sumatra, patrol the dense forest with captive elephants.

Credit: VESSWIC

Sumatra - Wide

Getting along with Elephants: HECx = Teacher Training in Human Elephant Coexistence in Sumatra, Zoo Outreach Organization Trust, FY 2008 Amount Awarded: \$79,591, Leveraged Funds: \$32,320

Conducted three workshops (94 participants total) and created exciting and innovative educational tools to bring about attitudinal and behavioral change among people living near elephants and their habitat. Provided participants with learning materials, such as manuals in English and Bahasa, drama kits, and educational packets.

Developing the Capacity within Indonesia to Conduct DNA Analyses of Elephants and other Endangered Wildlife Species Based on Non-Invasive Sampling, Wildlife Conservation Society FY 2011, Amount Awarded: \$62,268, Leveraged Funds: \$65,407

Developed a laboratory facility in Indonesia that employs DNA-based technologies to estimate populations, sex ratios and genetic diversity information for the key elephant populations in Sumatra.



Above: Bornean elephant, Malaysia.

Credit: USFWS

4. Laos PDR

Elephant Management and Human Elephant Conflict Project in Laos PDR: Elephant Monitoring - Improved Patrolling and Enforcement for Elephant Conservation in Nam Pouy National Biodiversity Conservation Area, World Wildlife Fund-Laos PDR Program, FY 2007 & FY 2010 Amount Awarded: \$107,212, Leveraged Funds: \$112,924

Held a national workshop to focus on elephant priority landscape management and identification. A draft action plan was formulated with goals, objectives, and activities aimed at mitigating and eliminating threats to elephants in the southern Mekong forests. Developed a system for patrolling and response to illegal activities in Nam Pouy National Park

Assessing the Status of the Elephant Population and Reducing Human-Elephant Conflict in the Nam Kading National Protected Area, Laos PDR, Wildlife Conservation Society, FY 2010 Amount Awarded: \$59,897, Leveraged Funds: \$54,873



Above: Bornean elephant, Malaysia.

Credit: USFWS



Collected over 300 dung samples to use for DNA-based Asian elephant population estimations. Analyzed the different aspects of human-elephant conflict and how human-elephant conflict is monitored around Nam Kading National Protected Area and suggested that law enforcement be the top priority for Asian elephant conservation in the area. Reached nearly 4,000 individuals in Laos PDR, mostly women and school-children, through an extensive education campaign. This campaign included the distribution of 'elephant notebooks', posters, and t-shirts.

An Assessment of Elephants and their Habitats in Lower Mekong Forest and WWF Areas Contribution to the National Program for Integrating Elephant Management and Rural Livelihood Improvement Laos PDR, World Wildlife Fund, Inc., FY 2004 Amount Awarded: \$26,648, Leveraged Funds: \$114,960

Surveyed villagers in the lower Mekong area of Laos PDR and found that many villagers believe that a lack of food, or fodder, in the forest and the disturbances in the forest, such as logging, were the main forces driving elephants to raid the crops in nearby



Above: A group of elephants in Kui Buri National Park, Thailand.
Credit: World Wildlife Fund

Published posters and books that addressed Asian elephant conservation issues and their biology. The books were educational, and for many rural children perhaps the first of its kind. Also established "Elephant House" - a cultural tourism center for conservation that also includes educational activities for many age groups. Produced the book titled '32 Souls'. It has beautiful imagery that portrays the life of the mahout and his charge, journeys through the legend and myth of the Asian elephant, and also takes a behind the scenes look at the Laotian celebration, the Elephant Festival. The book was titled to encompass the Lao belief that elephant like humans possess '32 kwan' or body spirits.

villages. Furthermore, villagers also thought that elephants preferred crops to food found in the forest and also cited a lack of water resources as another factor in the increased human-elephant conflict in the area. Conducted information sessions for local villagers about natural resources management and tested different human-elephant conflict mitigation strategies.

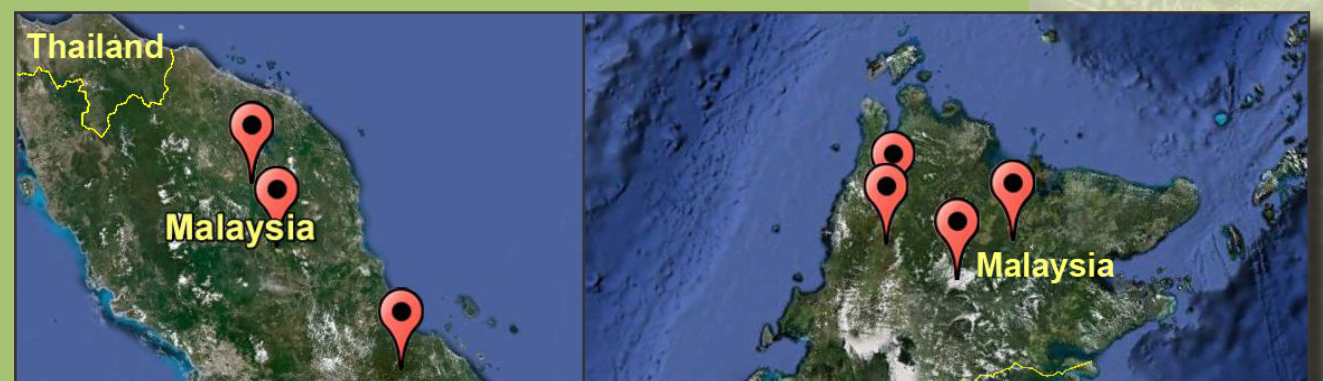
Conservation of Asian Elephants on the Nakai Plateau, Khammouane Province, Laos PDR, Wildlife Conservation Society, FY 2004
Amount Awarded: \$62,003,
Leveraged Funds: \$74,827

Built local capacity to conduct applied research concerning human-elephant conflict and elephant's seasonal movements, births, deaths, immigration, habitat use, and several other factors as well as producing a GIS database of the study site with all relevant data layers to inform conservation.

Laos PDR Elephant Community Awareness Program, Association Elefantasia, FY 2004 & FY 2010
Amount Awarded: \$91,679,
Leveraged Funds: \$86,850

Building Public Support for Asian Elephant Conservation in Laos PDR with the "Friends of Wildlife" Radio Program, Wildlife Conservation Society, FY 2006, FY 2007 & FY 2010
Amount Awarded: \$127,393,
Leveraged Funds: \$119,421

Raised public awareness and knowledge of the status of Asian elephants by broadcasting effective and popular radio programs including status of and threats to Asian elephants. Increased the listening audience by collaborating with the Lao PDR communication company to develop a campaign that draws mobile telephone users into the listening audience. The recipient produced 251 programs that have aired nearly 1,000 times across Laos PDR since 2007.



5. Malaysia

Model Elephant Conflict Mitigation Squad & Support to the Community-Based KOCOP Elephant Conservation Unit for the Lower Kinabatangan Wildlife Sanctuary, Sabah, Malaysia, HUTAN (Kinabatangan Orangutan Conservation Project), FY 2003, FY 2007 & FY 2009
Amount Awarded: \$107,525,
Leveraged Funds: \$157,855

With the help of Elephant Conservation Units (ECU), helped reduce human-elephant conflict and developed a community based elephant conflict mitigation squad. Education activities were carried out to help people understand the importance of implementing conservation activities.

Identifying the Forest Habitat Needs of Borneo Elephants & Development of an Asian Elephant and Sumatran Rhinoceros Conservation and Management Strategy in South-Eastern Sabah, Malaysia, World Wildlife Fund-Malaysia, FY 2002 & FY 2005
Amount Awarded: \$107,814.77,
Leveraged Funds: \$470,207.84

Mapped the movements of five elephants and home range was 1.3-1.5 square miles annually. Elephants appeared to live in greater density in lowland forest, mostly covered by secondary forest. Worked towards the establishment of a "managed elephant range" encompassing the Sebuking and Kinabatangan watersheds in partnership with the Sabah Forest

Department and Sabah Wildlife Department.

WCS/Government of Malaysia West Malaysian Elephant Project: Elephant Surveys and Training in Taman Negara National Park, Malaysia, Wildlife Conservation Society, FY 2006
Amount Awarded: \$58,260,
Leveraged Funds: \$85,706

Conducted an extensive program of training and capacity-building for the Government of Malaysia' Department of Wildlife and National Parks. This involved both classroom based survey design, analysis courses, and practical field-based courses. These training courses included a nine day workshop facilitated by the Wildlife Conservation Society.



Below: An elephant family in Borneo.
Credit: USFWS

**WCS/Government of Malaysia
West Malaysian Elephant Project:
Population Surveys, Capacity
Building & Human-Elephant Conflict
Reduction in Endau-Rompin National
Park, Malaysia, Wildlife Conservation
Society, FY 2007, FY 2008, FY 2009,
FY 2010 & FY 2011 Amount Awarded:
\$301,981, Leveraged Funds: \$344,314**

Estimated the size and distribution of elephants in Endau Rompin State Park and determined the threats to elephants and their habitat. Initiated surveys to assess human-elephant conflict and began mitigation measures. Continued to build capacity by training Malaysian elephant surveyors, researchers, conservationists, and protected area staff.

**Conservation Genetics of the
Bornean Elephant in Sabah,
Institute for Tropical Biology and
Conservation, University of Malaysia
Sabah, FY 2007 Amount Awarded:
\$50,163,
Leveraged
Funds: \$446,095**

Collected information on the elephant population status, population genetics, and dispersal/migration patterns and provided this information to the Sabah Wildlife Department to include in the Bornean Elephant Management Plan. Built the capacity of young scientists and conservationists in Sabah by training students in population genetics and molecular ecology.

**Development and Application
of Molecular Genetic Tools &
Monitoring the Effectiveness of
Translocation as a Management
and Conservation Tool for Asian
Elephants in Peninsular Malaysia,
Zoologist Have Kobenhavn
(Copenhagen Zoo), FY 2011 Amount
Awarded: \$85,215, Leveraged Funds:
\$131,254**

Deployed six GPS-satellite transmitters on translocated elephants to compare post-release ranging behavior of translocated elephants with that of elephants that remain in the habitat. Developed molecular technology capacity to describe the genetic structure of elephant population. Assessed the effects of translocations in Taman Negara National Park in peninsular Malaysia.

**Satellite Tracking, Social Behavior
and Management of the Bornean
Elephant, Danau Girang Field Center,
FY 2009 Amount Awarded: \$52,118,
Leveraged Funds: \$38,283**

Drafted the Bornean Elephant State Action Plan and a workshop was organized by the Sabah Wildlife Department together with Danau Girang Field Centre, WWF-Malaysia, and the NGOs HUTAN and BORA in June 10-11, 2010.

**International Workshop on the
Conservation of the Bornean
Elephant (*Elephas maximus
borneensis*) in Sabah, Malaysia,
Institute for Tropical Biology and
Conservation, University of Malaysia
Sabah, FY 2008 Amount Awarded:
\$24,200, Leveraged Funds: \$29,900**

Provided a forum for information sharing on Bornean elephant ecology, distribution, movement, habitat use, and human-elephant conflict. The workshop resulted in a draft of the Sabah Elephant Management Plan, a set of resolutions and recommendations to the Sabah State Government toward conservation and management of Bornean elephants.

Below: An elephant walks through the forest in Sabah, Borneo, Malaysia.

Credit: USFWS



6. Myanmar (Burma)

**Measuring Forest Cover and
Critical Areas for Biodiversity in
Myanmar, Conservation International
Foundation, FY 2002 Amount
Awarded: \$34,008, Leveraged Funds:
\$20,668**

Analyzed satellite images to produce maps and statistics on forest loss and fragmentation in Northern Myanmar since 1989. Produced a forest cover baseline against which future changes could be measured. Developed working relations with other organizations to form a coordinated conservation program.

**National Conservation Assessment
of Myanmar's Wild Elephant
Populations, Smithsonian Institution,
FY 2003 Amount Awarded: \$80,000,
Leveraged Funds: \$61,961**

Built capacity of Forest Department staff by training them to monitor elephant distribution, abundance, and seasonal movements in Alaungdaw Kathapa National Park and Htmanthi Wildlife Sanctuary. Assessed human-elephant conflict and habitat encroachment and discussed existing mitigation strategies for the area.

**Conservation of Wild Elephants and
Elephant Habitat in the Hukaung
Valley, Burma, Wildlife Conservation
Society, FY 2007, FY 2009 & FY
2010 Amount Awarded: \$167,061,
Leveraged Funds: \$177,815**

In partnership with the Forest Department, mapped the distribution of elephants and threats to the elephant population in Hukaung Valley. Provided additional protection for this population through the creation of Elephant Protection Units (EPUs) and supported the monitoring and management of the existing captive (domestic) elephant

population in Hukaung Valley.
**Community-Based
Conservation of Asian
Elephants in the Rakhine
Yoma, Myanmar, Indo-
Myanmar Conservation (IMC),
FY 2010 Amount Awarded:
\$35,595, Leveraged Funds:
\$10,290**

Reached an incentive agreement with Chin villagers that ties development support to the termination of hunting and their participation in wildlife monitoring. Provided elephant monitoring training, including surveying using standardized methods to estimate population and supported regular joint patrols and monitoring by Chin



Young male elephant in Sabah, Borneo, Malaysia.

Credit: USFWS

7. Thailand

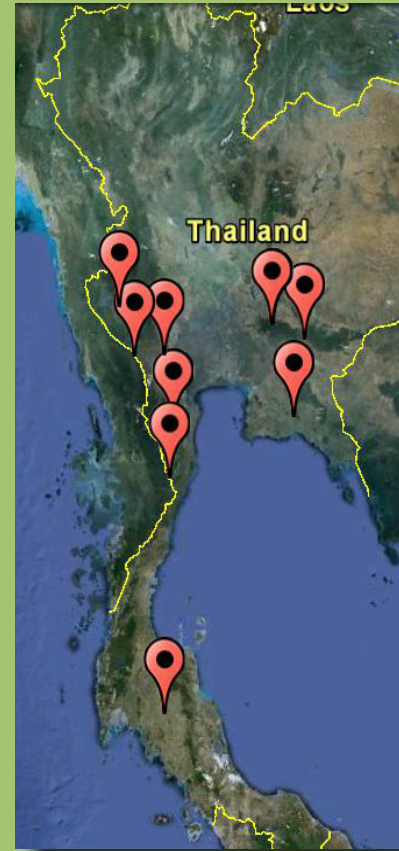
Asian Elephant Surveys, Human-Elephant Conflict Mitigation, & Law Enforcement Monitoring in Kaeng Krachan National Park, Thailand, Wildlife Conservation Society, FY 2005, FY 2006, FY 2007, FY 2008, FY 2009, FY 2010 & FY 2011 Amount Awarded: \$400,954.84, Leveraged Funds: \$455,680

Trained park staff in modern survey methods and worked to reduce human-elephant conflict around Kaeng Krachan National Park. Also conducted law enforcement and monitoring activities, monitored effectiveness of patrolling systems, and trained staff from other protected areas in patrolling methods and MIST (Management Information Systems).

Developing Wildlife Guardians in Thailand's Forgotten Park: Lasting Protection for Elephants and Habitat through Forest Ranger Training and Support & Sustainable Livelihoods for Ex-Poachers in SE Asia, FREELAND Foundation, FY 2009, FY 2010 & FY 2011 Amount Awarded: \$127,277, Leveraged Funds: \$133,669

Conducted standardized Enforcement Ranger Training Course that trained rangers following a curriculum endorsed by the ASEAN Centre of Biodiversity, in partnership with Thai military agencies. Supported outreach activities through a combination of youth camps, school visits, and community outreach initiatives. Enhanced law enforcement to improve protection of elephants and other wildlife at Thap Lan National Park and Pang Sida National Park.

Building VP Wildlife's Defense - the Southeast Asian Wildlife Protection Program and Center: Managing Wild Elephant Populations at Khao Yai National Park, Thailand, WildAid, Inc., FY 2002 Amount Awarded: \$81,980, Leveraged Funds: \$215,655
In partnership with the Thai Royal For-



est Department and the Smithsonian Institution, trained Khao Yai National Park staff in elephant survey techniques. Established the Khao Yai Conservation Project Office in Thailand into a training center for wildlife protection. Introduced the 'Protected Area Staff Training Manual' (in English, Thai, and Khmer) which includes sections on law enforcement, wildlife trade, field craft, monitoring, and outreach.

Strengthening Conservation of Asian Elephants in the Western Forest Complex and other Key Elephant Sites in Thailand, Wildlife Conservation Society, FY 2009, FY 2010 & FY 2011 Amount Awarded: \$188,629, Leveraged Funds: \$184,481

Since 2005, Wildlife Conservation Society has worked to improve the chronic issue of ineffective law enforcement by

establishing the system locally known as Smart Patrol. The first patrol manual was introduced in Thai in 2005 and the patrol database design was adapted from the CITES Monitoring the Illegal Killing of Elephants (MIKE) law enforcement database.

Strengthening the Management for a Key Population of Elephants at Kuiburi National Park in the Tenasserim Range, Thailand, World Wildlife Fund-Thailand, FY 2005, FY 2007 & FY 2010 Amount Awarded: \$138,428, Leveraged Funds: \$107,560

Reduced the likelihood of human-elephant conflict around Kui Buri National Park in Thailand by improving elephant habitat, which included removing invasive species, creating watering holes, and setting up salt licks so the elephants would be more inclined to stay within the park. Also increased the capacity of Kuiburi National Park personnel and local residents to respond to human-elephant conflict situations by providing them with training and setting up a permanent database system to record conflict. In Kui Buri National Park, the elephant population appears to have increased 15% from 2009 to 2010.

Developing the Salakpra Elephant Ecosystem Conservation Alliance (SEECA) to Facilitate Collaborative Protection of Salakpra's Elephants and their Habitat by Local Communities and Strengthening Protection of Srisawat Corridor, Zoological Society of London, FY 2006, FY 2008, FY 2009, FY 2010 & FY 2011 Amount Awarded: \$313,208, Leveraged Funds: \$1,060,735

Established a network of functioning community groups as active members of a Salakpra Elephant Conservation Alliance (SEECA) and developed a system of community rights, responsibilities and regulations covering the use and protection of forest resources. Established the Smart Patrol System, which uses the MIST (Management Information Systems) method of data collection



in collaboration with the Department of Wildlife Conservation and the Elephant Conservation Network.

Developing an Innovative Management Plan for a Key Population of Asian Elephants in Kaeng Krachan National Park within the Tenasserim Range, World Wildlife Fund-Thailand, FY 2007 Amount Awarded: \$47,550, Leveraged Funds: \$61,000

Developed a management plan to serve as a model process for the Department of National Parks, Wildlife and Plant Conservation. A core management planning team was formed that collected data, gathered important information related to park management, studied and analyzed research, and assessed the needs of the park's officers.

A Continuation of the Project Community Organizing and Managing Elephant Path between Khao Chamao National Park and Ang Lue Nai Wildlife Sanctuary of Thailand, Reproductive Health for the Quality of Life Development Association of Thailand (HAT), FY 2005 Amount Awarded: \$30,371, Leveraged Funds: \$11,890

Above: An elephant family in Kui Buri National Park, Thailand. Credit: World Wildlife Fund

Succeeded in making the government declare a corridor site as part of the Ang Lue Nai Wildlife Sanctuary. Seven youth groups totaling 351 students participated in a two-day workshop. Activities included reforestation activities, such as tree planting.

Getting Along with Elephants, HECx: (Educator Training in Human Elephant Coexistence in Thailand), Zoo Outreach Organization Trust, FY 2009 Amount Awarded: \$97,945, Leveraged Funds: \$29,900

Carried out three educator training workshops (89 participants) to persuade educators from Kanchanaburi to change their attitude towards human-elephant conflict by using a variety of dynamic, innovative, and exciting teaching techniques about human-elephant conflict prevention and mitigation.

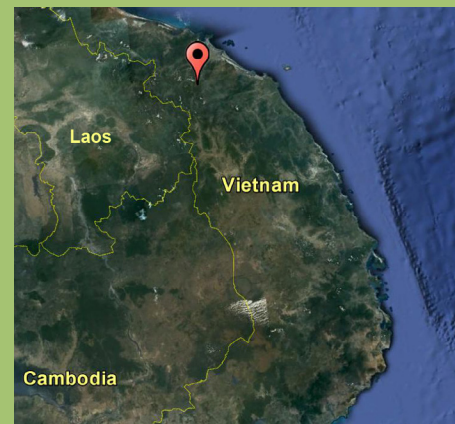
Launching a Series of Locally Created Thai-English Storybooks for 7-10 year old Students to Help Turn Human-Elephant Conflict into Human-Elephant Coexistence, Zoological Society of London, FY 2010 Amount Awarded: \$40,702, Leveraged Funds: \$56,144

Produced two volumes of themed storybooks focused on wild elephants and their conservation and written and illustrated by local students aged 7-18 through a process of class instruction, family engagement and public competition. Held a public, competitive painting competition around Thai Elephant Day for Kanchanaburi's 7-18 year-olds.

8. Vietnam

Quang Nam Provincial Elephant Conservation Program - Republishing Educational Guidebook "Experiences in Human-Elephant Conflict Mitigation", Quang Nam Forest Protection Department, FY 2004 & FY 2006 Amount Awarded: \$44,240, Leveraged Funds: \$33,310

Vietnam's wild elephant population is less than 100, and the local government agreed to establish 166 square miles for a Species and Habitat Conservation Area. Thirty three people were trained in an elephant monitoring training course. Twenty three patrols were able to destroy 60 snares, 12 charcoal stoves, two forest shelters, and aid in the confiscation of 611 cubic feet of timber. Re-published and distributed a guidebook to all forest protection branch offices so that the staff is better informed.



Right: Elephants on a road in Malaysia.

Credit: HUTAN

9. Regional: Southeast Asia

Developing and Implementing a Program for the Monitoring of Illegal Killings of Elephants in Southeast Asia, CITES MIKE Program, FY 2002, FY 2003, FY 2004 & FY 2005 Amount Awarded: \$434,230, Leveraged Funds: \$970,300

Supported capacity building, law enforcement training, and established standards for measuring populations using the 'MIKE Dung Survey Standards'. Measured certain populations with this method. Suggested that elephants in Southeast Asia may be more genetically diverse than elephants in South Asia.



Above: Protected Area managers participate in a reforestation project in Kui Buri National Park, Thailand.

Below: A herd of excited elephants run in Kui Buri National Park, Thailand.
Credit (both images): World Wildlife Fund



RANGE-WIDE (ASIA)

Promotion of Elephant Conservation in Asia, The World Conservation Union (IUCN)-SSC Asian Elephant Specialist Group, FY 2002 Amount Awarded: \$24,320, Leveraged Funds: \$13,200

Produced four issues of "Gajah" the official journal of the Asian Elephant Specialist Group of the Species Survival Commission of the World Conservation Union (IUCN). The journal is dedicated to articles on wild and captive Asian elephants.

Asian Elephant Range States Meeting, CITES MIKE Program, FY 2005 Amount Awarded: \$56,270, Leveraged Funds: \$21,280

Held a meeting of all 13 Asian elephant range countries. This was the first time that all 13 range countries met to discuss a suite of important issues concerning the endangered Asian elephant, including human-elephant conflict, skewed sex ratios due to selective removal of males, and other important issues.

Range-Wide Priority Setting and Action Planning Workshop for Asian Elephants, Wildlife Conservation Society, FY 2006 Amount Awarded: \$27,407.06, Leveraged Funds: \$32,907

Partnered with state wildlife agencies, conservation organizations, IUCN/SSC Asian Elephant Specialist Group, and other stakeholders to develop range-wide priorities and actions for Asian elephants.

Workshop to Review the Effectiveness of Human-Elephant Conflict Mitigation Methods that Have Been Applied in Asia, The World Conservation Union (IUCN)-SSC

Asian Elephant Specialist Group, FY 2009 Amount Awarded: \$87,620, Leveraged Funds: \$20,900

Brought together a group of people with practical experience in human-elephant conflict (HEC) mitigation work in Asia to review the causes of HEC, the HEC mitigation measures in place, compile a summary of what mitigation measures have worked and what have not, and developed a document listing best management practices which will be maintained on the IUCN/SSC Asian Elephant website as a living document. More than 81 people contributed to this document. The workshop was held in Beijing in conjunction with the Society for Conservation Biology conference. Nearly 100 people attended for two days.

Monitoring Asian Elephant Populations and Assessing Threats: A Manual for Researchers, Managers, and Conservationists, Wildlife Conservation Society, FY 2009 Amount Awarded: \$18,400, Leveraged Funds: \$22,000

To address gaps in knowledge of elephant populations, especially in Southeast Asia, a user-friendly manual was created for monitoring Asian elephant populations and assessing threats, which explained the science and statistics behind the methods discussed, and more direct practical chapters that explained how to implement these methods in the field.

Development of an Integrated Spatially Referenced Global (African and Asian) Elephant Database (AAED), The World Conservation Union (IUCN)-SSC African Elephant Specialist Group, FY 2008 Amount Awarded: \$49,401, Leveraged Funds: \$62,150

Attempted to improve our knowledge of the distribution and abundance of elephants across their range, to develop and build an integrated African and

Asian Elephant Database (AAED) as a repository of elephant population data generated by national authorities and other agencies.

Direct Cross-Regional Support for Elephant Range States to Help Them Meet Their Obligations under the CITES Monitoring the illegal Killing of Elephants (MIKE) Project: Carcass Detection, Law Enforcement, Population Monitoring, and Capacity-Building, Wildlife Conservation Society, FY 2010 Amount Awarded: \$153,925, Leveraged Funds: \$135,698

Identified law enforcement (LE) and LE monitoring training needs in southeast Asian range states, provided training and supported at their MIKE sites as necessary. Conducted and facilitated training of range state government agency staff in elephant population survey methods and data analysis and reporting skills.



Above: Elephants poke their heads out of the forest in Malaysia.

Credit: USFWS

Below: Kui Buri National Park, Thailand.

Credit: World Wildlife Fund



Acknowledgements

We would like to express our deep appreciation to our many grantees and partners in conservation who so willingly share their insights, images, and expertise. Without their dedication and on-the-ground conservation successes, this report would not have been possible. A special thank you to Meenakshi Nagendran for her dedication to the Asian Elephant Conservation Fund and her insights into the many accomplishments of the AsECF during the last 10 years of the program.

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Cover photos (from left to right): Protected Area personnel measure elephant footprints as part of survey activities in Kui Buri National Park, Thailand by World Wildlife Fund, A male elephant in Yala National Park, Sri Lanka by Centre for Conservation and Research, A group of elephants in Malaysia by HUTAN, Baby elephants play in Yala National Park by Centre for Conservation and Research, Young girls in Sumatra make fans with positive elephant conservation messages by Fauna & Flora International.

Side bar photo: A mother and her calf drink from a river in southeast Asia by Wildlife Conservation Society

Back cover photo: Birds sit on an elephants back in Kaziranga National Park by USFWS

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Above: Elephant herds on Wilmanne Road, Sri Lanka.

Credit: Centre for Conservation and Research



U.S. Fish & Wildlife Service

International Affairs

Division of International Conservation

4401 N. Fairfax Drive, Suite 100

Arlington, VA 22203

(703) 358-1754

(703) 358-2115/fax

www.fws.gov/international

Facebook@USFWS_International Affairs

twitter.com/USFWSInternatl

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