STAVING OFF EXTINCTION:

A DECADE OF INVESTMENTS TO SAVE THE WORLD'S LAST WILD TIGERS (1995-2004)

Brian Gratwicke, John Seidensticker, Mahendra Shrestha, Karin Vermilye and Matthew Birnbaum.

THE NATIONAL FISH AND WILDLIFE FOUNDATION
SAVE THE TIGER FUND

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ExxonMobil

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EXECUTIVE SUMMARY

This is the first quantitative evaluation of the performance of $12.6 million invested by Save The Tiger Fund (STF) in more than 250 grants in 13 out of 14 tiger range countries. This amount represents almost one third of all the grant funds applied specifically to in situ tiger conservation between 1995 and 2004. The largest contributions to this effort came from ExxonMobil and its subsidiaries, which donated nearly $12 million to STF between 1995 and 2004, representing one of the largest corporate commitments to saving a species.

After a decade of investments, there were many successes and some failures, but on average, STF grantees exceeded their original objectives. STF invested in the following threat-mitigating activities: **1**) Scientific research of tiger ecology and monitoring of tiger numbers to improve our understanding of their needs (31%); **2**) Education and outreach activities to build public support for tiger conservation (27%); **3**) Anti-poaching patrols to enforce laws in protected areas (13%); **4**) Leadership training to emerging M.S. and Ph.D.-level conservation leaders (6%); **5**) Trafficking reduction activities to combat the global demand for and supply of tiger parts (5%); **6**) Habitat restoration and acquisition (5%); **7**) Sustainable development projects that improve livelihoods of people living in tiger landscapes (5%); **8**) Zoo breeding programs to secure genetically viable populations of tiger subspecies in the world's zoos (4%); and **9**) Human-tiger conflict reduction (4%).

Over the course of the decade, STF helped conservationists to change the conservation paradigm from one that focused exclusively on protected areas to a larger, landscape-level approach that weaves together protected core areas with human-tiger friendly habitats like multiple-use forest buffer zones connected to each other by habitat corridors. The two most successful examples of this work also received the bulk of STF's investments: the Russian Far East (21%) and the Terai Arc Landscape of Nepal and India (11%). A landscape-level vision has been developed in both these places that has buy-in from many different NGOs and their respective governments. These collaborative, problem-solving strategies involved many different organizations that successfully worked together to stabilize tiger populations.

Given that STF provided nearly one third of the funding to tiger conservation efforts since 1995, the evaluators believe that STF can take some credit for larger landscape-level success stories such as those of the Russian Far East and the Terai Arc landscape. Without this conservation financing mechanism and the conservation partnerships that it fostered, tigers would be much worse off today.

Despite these successes, the evaluation highlights room for improvement:

1) Grantees should be encouraged to work towards long-term goals that yield conservation outcomes at scales greater than the level of individual parks.

2) They should be encouraged to focus on real conservation outcomes for tigers and to quantify those by using meaningful indicators. If this aspect of the program is strengthened, STF will be able to conduct a more quantitative meta-evaluation of its progress over the next 10 years.

3) Grantees have disseminated their findings widely, but STF should also play a more active role to encourage grantees to look within and beyond their own back yards for conservation methods and best practices that have been established by others, and to learn from that experience rather than "reinventing the wheel."

4) In order to duplicate these successes, STF will need to select grant portfolios that compliment each other and encourage grantees to work to their institutional strengths and to encourage collaborative landscape-level partnerships that will have outcomes greater than the sum of their parts.

5) STF should work to provide additional financing mechanisms for tiger conservation or to narrow the geographical scope of its existing investments to ensure that they result in meaningful landscape-level improvements.

ACKNOWLEDGEMENTS

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Finally we are very grateful to the Save The Tiger Fund Council for their expert guidance over the last decade, to ExxonMobil and the Critical Ecosystem partnership fund and other donors for their continued financial support for wild tiger conservation.

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PREFACE

I saw my first wild tiger in 1972 in India's Corbett National Park, less than 48 hours after arriving in India for the first time. I can only echo the great Indian tiger scientist and conservationist Ullas Karanth when he says: "Seeing a tiger is like a dream." Every wild tiger, and every pugmark, I have since encountered has been dreamlike. We know, however, that securing and recovering the last wild tigers is not an otherworldly activity. It takes hard work, resources, and dedicated tiger champions, all in the right frame of mind and working with a common purpose. It has been my great honor and pleasure to have served as the chairman of the Save The Tiger Fund (STF) Council for more than a decade -- thinking, planning, and working with my fellow council members as we sought to chart ways to save wild tigers in the shifting political, economic, and natural landscapes in Asia. As STF has invested over the last decade, I believe our strategy has become more informed because of our intellectual growth, and this report is an essential part of our intellectual growth. For the first years of STF, we relied on my memory and the collective memories of our council members and three previous STF directors of our projects and their reported results as our primary learning tool. The three previous directors of STF have moved on, and while we have pretty good memories, they are human memories, with all the constraints and limitations that human memories have. With this report we have moved our institutional memory from our minds to real spread sheets as the basis for our analysis.

We began by thinking that "Saving the Tiger" was a "tame" problem. Maintaining tigers with their genetic diversity intact in zoos is a problem that had been tamed over the previous decade. Improving zoo tiger management was a complex problem but that had been sorted out. At first, some on the council saw wild tiger conservation as a similar "tame" problem that basically could be solved with more money and more zoo involvement (Seidensticker 1997). Others, including myself, knew wild tiger conservation is much more complex. Securing a future for wild tigers is in a class of problems that Ludwig (2001) and others have called "wicked" problems. (Although I have only recently come to make this distinction formally, I believe STF understood this intuitively.) The distinction here is that tame problems are simple, linear problems and there are standard and established routines to solve them. In wicked problems, there are no clearly defined objectives, no definitive formulations, there are diverse and contradictory approaches, no stopping rules, no tests for solutions, and problems cannot be separated from issues of values, equity, and social justice. STF funded some early zoo and museum tiger exhibits to increase public awareness of the tiger's plight and collection planning for the critical tiger subspecies residing in Asian and European zoos. What we did not address at that time was the issue of farmed tigers beyond identifying farmed tigers as a simple problem to be addressed by animal welfare activists. Over time, I think, the farmed tiger problem has evolved into a complex problem that is now threatening to impact wild tiger populations and, as such, has become part of our wicked problem. But we recognize this as such (STF 2005) and this is one of our next tasks to address.

In the first two years of our existence, we redefined the STF mission from saving tigers to securing a future for wild tigers, and we focused our resources on the challenges presented by wild tiger conservation. In working to tame this problem:

a) We shifted from a taxonomic subspecies approach—as had been done in zoo management—to an ecological approach, working population-by-population across the tiger's entire Asian range to preserve "tigerness," the characteristic adaptations that tiger populations have that are living in habitats as different as tropical dry forests, tallgrass-riverine forests, mangrove forests, tall rainforests, temperate forests of the Russian Far East, and others. Our hypothesis and guiding vision was founded on the 5Cs formula: large **Carnivores** need substantial **Core** areas, free of human disturbance; **Connected** through corridors; with supporting local **Communities;** and **Communication** mechanisms in place to identify both the needs of tigers and local people

connected locally, regionally, nationally, and internationally in tiger landscapes we called Tiger Conservation Units, or TCUs.

b) Tigers must be protected and our challenge is how to provide tigers with the security they need with our limited resources. We rejected the idea that STF could best contribute to securing a future for wild tigers by subsidizing the protection of tigers reserve-by-reserve. We also rejected the notion that only good fences and protection are the ways and means to secure the future of wild tigers. We did so because there simply are no reserves large enough to secure the tiger's future in perpetuity. Many protected areas – large and small – in the tiger's range have many people living in them. Many tigers occur outside of protected areas. Depleted prey populations, inside and outside protected areas, is a primary threat to wild tiger security. The threats to wild tigers are at multiple scales. And we also do not understand the root causes of many of the threats that tigers face. We have taken on "security improvement projects" on a case-by-case basis, using these projects as learning tools in seeking the best ways forward under varying conditions.

c) We didn't have that much money to invest, so we continually asked: How do we make an impact with the money we have? We sought partners to invest in who grasped the matrix and scale of threats where they were working. Or we saw how each partner fit into the matrix and scale of threats and could contribute in its own way with its own strengths.

d) We continued to support increasing our knowledge about tigers through long-term studies on tiger ecology in contrasting habitats and through statistically valid, long-term monitoring of tiger populations and their supporting prey populations. I think of these as components of our **first pillar** in our STF approach to saving wild tigers.

We understood, again intuitively, that there were different problem domains. We knew that we must never seem to know it all. My years in Asia had taught me that, and STF did not entertain an authoritarian coping strategy. We knew that we could not be myopic or arrogant. We respected those who had gone before. We believed in restraint and humility. We didn't promise what we could not deliver. We were interested in true partnering. In thinking back, I believe this was a key that changed some key players' minds about us. Those who were initially quite hostile, soon realized we meant what we said: "We are here to help and not to tell you what to do." We brought tools -- including improved understanding, planning skills, lessons learned -- and THEN some limited resources. We understood that we are a guest in Asia. Asians, I think, tend to think that Americans believe themselves to be exceptionally imbued with unlimited righteousness, and, too, that Americans believe they have the moral authority to impose their vision on the world. We defied that stereotype.

Before the *Tigers 2000* meeting in 1997 in London, which we helped support, the coping strategy among NGOs was a competitive, even combative one (Seidensticker et al. 1999). There was major conflict over the problem definition. Was the problem poaching, lack of protection, illegal wildlife trade, securing tiger habitat, protecting the prey base, and so forth. The dominant belief was that stopping the poaching through improved direct protection and containing the illegal wildlife trade would suffice to secure a future for wild tigers. Indeed, a key step in securing a future for endangered wildlife has been to exert appropriate controls on commercial trade, which is what CITES is all about, and it was felt in some circles that if this could actually be accomplished in deed, rather than in theory, tigers would be saved. After the *Tigers 2000* meeting, most who attended realized that the problem of saving wild tigers across their range was much more complex than we hitherto had understood and this needed to be widely recognized and addressed. A first step forward was agreeing that this complexity needed to be addressed in a cooperative problem-solving domain. We—STF—championed this, and other NGOs joined, albeit not as much as we would have liked, but there was an enlightened realization that cooperation trumped competition

PREFACE

at every scale. This cooperation and the partnerships it engendered became the **second pillar** in our approach to securing a future for wild tigers.

The **third pillar** is that we recognized there is no "silver bullet" and that saving wild tigers requires continued action at multiple scales over the long-term with a reliable a financial commitment. After all, wild tigers and their habitats are threatened by transnational criminality, economic exploitation, and environmental depredations. These are some very heavy threats to counter. Our ability to respond has been greatly enhanced by ExxonMobil's long-term funding commitment to saving the tiger.

Our **fourth pillar**, building on what we had learned about shifting the domain from authoritarian and competitive ones to a cooperative one, is that we needed to build a network of like-minded partners. This required that we support the development and nurturing of conservation leaders at every scale. We can provide support in many ways but STF alone cannot save wild tigers on their home ground; this is the responsibility of range-state governments and their international support mechanisms such as CITES. The STF can only offer very carefully targeted, yet diverse, support. For example, in recent discussions with tiger range-country government officers we have explored developing a STF capability to offer training to forest and other government officers in building their own capacity to nurture public-private partnerships in support of wild tiger conservation. This is an action STF can take to move tiger conservation efforts out of authoritarian and conflict domains into a cooperative problem-solving domain with the public and private sectors joining in a common vision of securing and recovering wild tiger populations. This builds on the strength of our host organization – the National Fish and Wildlife Foundation – in marshaling all the help we can muster in support of wild tigers and their recovery.

We feel terrible about the blow to wild tiger conservation we documented in our report *Setting Priorities for Conservation and Recovery of Wild Tigers: 2005-2015*, prepared with our partners from the Wildlife Conservation Society, the World Wildlife Fund-US, and the Smithsonian's National Zoological Park (Dinerstein et al 2006). No one can be complacent after learning that wild tigers now occupy only 7% of their historic range and there has been a 40% decline in occupied tiger habitat in the last decade. We are left with three options. We can compassionately despair and go quietly into the night. We can compassionately despair, while ranting loudly, as we watch the last wild tigers die in their crumbling reserves and degrading landscapes. Or, we can roll our sleeves up and apply what we've learned where we have invested to some positive effect and change our approach where our investment has been less effective. Nothing less that the future of wild tigers is at stake. Because we believe in action, we have prepared this report to en indicate the practical steps that need to be taken now to ensure the long term survival of the tiger. We invite you to join us.

John Seidensticker
Chairman - Save The Tiger Fund Council

INTRODUCTION

WHAT IS SAVE THE TIGER FUND AND WHY CONDUCT AN EVALUATION?

Save The Tiger Fund (STF) was established in 1995 as an initiative of the Exxon Foundation and the National Fish and Wildlife Foundation. STF still receives the bulk of its financial support from the ExxonMobil Foundation and other major donors such as the Critical Ecosystem Partnership Fund and Walt Disney World, Co. Other funding streams have been important supplements to these resources and include court-ordered restitution funds, corporate employee matching funds, individual bequests, and donations from the general public.

After its first 10 years of grant making, Save The Tiger Fund could claim many successes: $12.6 million was invested in more than 250 projects throughout 13 of the 14 tiger range countries (Table 1) and some of these higher-level successes were noted in the 2002 publication *Save The Tiger Fund – A Model for Success* (Tilt and Frish, 2002):

1) Increased the impact and availability of funding for priority tiger projects,
2) Maintained a diverse and sustained conservation portfolio,
3) Forged partnerships to create new breadth and depth in tiger conservation,
4) Addressed the roots of tiger conservation problems,
5) Tolerated risk and remained flexible to accommodate new opportunities,
6) Promoted conservation leadership throughout the tiger's range,
7) Laid the groundwork for future tiger conservation.

(Tilt & Frish 2002).

Table 1: Save The Tiger Fund income and grant awards between 1995-2004

	Income 1995-2004	Project Allocations 1995-2004
ExxonMobil	$11,979,879	$10,246,642
Public Donations	$1,809,619	$1,634,893
Critical Ecosystem Partnership Fund	$500,000	$411,344
Interest and other	$361,142	$308,073
Total**	**$14,650,640**	**12,600,952**

* These are grants from other foundations.
** The difference between income and project allocations represents funds used to manage Save The Tiger Fund and money that was set aside for projects, but unallocated at the end of 2004.

Much of this information in *A Model for Success* was based on knowledge and experiences acquired by STF staff over the years and focused on the most positive examples of STF grantees' successes. Yet, from a programmatic perspective, much can be learned from failures too. The process of cherry-picking portfolios for success stories is both unfair and constrains self-analysis and learning (Jepson & Canney 2003). Much of the information about the performance of STF's grants is contained in more than 250 voluminous final reports, making the overall results of the entire portfolio inaccessible, even to staff, because there were no quantitative performance assessment mechanisms in place that could be used to quickly summarize the activities funded or ascertain how successfully these activities were accomplished.

With more than a decade of investment, and having spent $11.9 million from ExxonMobil and its subsidiaries alongside $2.6 million from other donors, the time is right to systematically answer the following questions: 1) *What were Save The Tiger Fund's successes and failures? 2) What did STF grantees accomplish in relation to their mission of saving the world's wild tigers?* and 3) *What are the best conservation methods for saving wild tigers?* The answers will be invaluable to the programmatic staff, donors, and council as they chart the way forward to improve and adapt their tiger conservation program.

INVESTMENT STRATEGY

Between 1995 and 2004 grants were awarded on a competitive basis, to programs conducted throughout the tiger's range and internationally. Twice annually a request for proposals was circulated, inviting applications for any tiger conservation projects. All proposals were compiled and sent out to at least three independent reviewers for their comments. Based on these comments,

the best proposals were selected by STF staff and recommended to the STF Council (Appendix A), who reviewed the proposals and staff recommendations.

The final selection of projects was made by the council and submitted to the National Fish and Wildlife Foundation board for approval. All projects during this period were initially awarded for a one-year work period. Multi-year programs applied for new grants each year. This investment strategy was very flexible, and relied heavily on expert opinion to guide investments in relation to emerging threats.

WICKED PROBLEMS

STF's investment strategy over the last decade recognized that there is no "silver bullet" that can save wild tigers because our knowledge about how to save tigers is incomplete, some people advocate contradictory solutions, threats can change overnight, and solutions are difficult to recognize because of complex interdependencies (Tilson et al. 2000). When STF was launched, illegal wildlife trafficking combatants, zoo-breeding program proponents, conservation research groups, and sustainable development agencies all sought to define the problem with tiger conservation and there had been little consistent agreement on the problem or on a single best approach to solving it, making it by definition a 'wicked problem' (Roberts 2000).

After defining the problem as "saving wild tigers," STF moved its problem solving away from an authoritarian problem-solving strategy by bringing in its partners and not actually declaring to them what they should be doing but by asking them what they could do best. STF used grant making as an incentive to encourage grantees to refrain from competitive problem-solving strategies that create winners and losers and to find a more collaborative win-win approach that involves multiple agencies working together for a shared vision.

STF understood that the tiger is and always will be a conservation-reliant species (Scott et al. 2005). That was what "Riding the tiger: tiger conservation in human-dominated landscapes" was all about (Seidensticker et al. 1999). STF understood that saving tigers ultimately boiled down to value systems and people (Kellert 1996), and thus placed an emphasis on leadership and facilitated projects that were locally conceived, and shied away from prescriptive grant making.

THE ROLE OF NGOS

Given the large tracts of land that tigers need to survive in densely populated parts of Asia and considering their enormous cultural importance, the ultimate responsibility for conserving tigers should rest with the range-country governments. Conservation charities and NGOs can help by providing support to complement government activities, but only governments have the mandate to implement policy and ensure coordination across different sectors to ensure the long-term persistence of tigers.

There is a diverse range of governance structures and conservation systems in place in each of the tiger range countries, with varying levels of participation from civil society and international NGOs (Jepson & Canney 2003; Lewis 2005). This means that pragmatic conservation strategies must be informed by the larger political framework within which they are nested. Flexibility and a degree of opportunism in conservation strategies under these varied circumstances is likely to yield better results than adhering to rigid formulas, but in order to ensure a viable future for wild tigers, governments, multi-lateral agencies, and NGOs must act together and have broad support from the general public (Seidensticker 1997).

MEASURING SUCCESS

Save The Tiger Fund is one of several international organizations that invest in tiger conservation. According to records maintained by Sarah Christie at the Zoological Society of London, STF has supplied one third of all the money spent by NGOs on tiger conservation projects between 1998 and 2004 .

Many of these programs address important tiger conservation issues. However, little work has

been done to analyze our progress or to measure the collective conservation impact beyond the scale of individual projects (Saterson et al. 2004). Recognizing this, STF spearheaded a three-day workshop "Saving the Tiger: Assessing our Success" held in 1999 at the Central Park Zoo (Ginsberg 2001). One of the resolutions that emerged from this workshop was agreement on the need to produce reports on tiger status at the site and landscape level using a tiger conservation scorecard that could feed up into a global analysis of tiger conservation efforts (Ginsberg 2001). Elements of this scorecard approach were used to conduct a systematic and comprehensive analysis of the current status of tigers published in 2006 (Sanderson et al. 2006). The results showed that today tigers occupy just 7% of their historic range and also indicate that tiger habitat has declined by up to 40% since the 1995 analysis (Dinerstein et al. 1997; Dinerstein et al. 2006; Sanderson et al. 2006).

Given these dramatic declines, critical thinkers will be asking: "What impact did individual Save The Tiger Fund investments have on wild tiger conservation over the last decade?" There are at least two ways to tackle this question. The first option is to conduct an independent evaluation of the tiger's status now compared to an existing baseline, and this has been accomplished quite convincingly by the first and second tiger conservation landscapes documents (Dinerstein et al. 1997; Dinerstein et al. 2006). Their results indicate that while there are some success stories, overall, tiger ranges have shrunk by up to 40% and that the species is in greater risk now than it was 10 years ago, despite significant investments to save them by NGOs, governments, and multi-lateral institutions.

The second option is to conduct a rigorous assessment of individual projects to allow us to assess the impact of individual investments, and how significantly tigers have benefited from those investments. This meta-analysis should assess 1) the effectiveness of individual projects in relation to clearly defined goals, 2) the cumulative effects of individual projects at regional and national levels, and 3) the lessons learned and how they were used to inform conservation actions elsewhere. So this is what we did in this project.

AIMS

This archival evaluation is based on 254 final reports and the aims are to:

1) Provide a detailed summary of STF investments from1995-2004, broken down by activity type, and to assess whether the grantees managed to achieve the promises outlined in their proposals.
2) To evaluate the overall impact of STF spending within each tiger landscape.
3) To synthesize methods and lessons learned over the last 10 years, to improve the capacity of both STF and its grantees to implement more effective tiger conservation programs.

METHODS

CLASSIFICATION

We conducted an archival evaluation of $12.6 million invested in 254 projects (Appendix C) undertaken between 1995 and 2004. Every project's proposal was reviewed and proposed activities were classified into the following suites of activities that mitigate different kinds of threat:

1) *Understanding* – monitoring and research on tigers, prey, and their habitats, dissemination of findings, and building local research and monitoring capacity.
2) *Education* – building schools, developing teaching capacity, developing conservation curricula in schools, and outreaching to the general public using awareness materials, events, and the media.
3) *Anti-poaching* – monitoring poaching incidents, outreaching to hunters, and enforcement activities, and increasing anti-poaching capacity of reserve staff through training and provision of equipment.
4) *Sustainable development* – improving human well-being through development of alternative livelihoods, community health programs, resettlement assistance, alternative energy sources, and formation of village resource committees.
5) *Habitat* – acquiring, restoring, and consolidating tiger habitats for conservation.
6) *Leadership* – grooming future generations of tiger conservation leaders through specific leadership training programs or post-graduate degree courses.
7) *Trafficking* – increasing capacity of enforcement officials and customs agents, monitoring trade, conducting enforcement activities, and targeting education of consumer groups.
8) *Zoo Breeding* – improving breeding facilities or management of tiger subspecies held in zoos.
9) *Human-tiger conflict* – providing human-tiger conflict response units, monitoring human-tiger conflict, conducting outreach and compensation schemes in tiger landscapes, and translocating problem tigers.

Each deliverable outlined in the proposal was recorded in a database using this classification scheme. Then it was weighted to the nearest 10% according to the amount of money or effort invested in each activity. This allowed us to define and quantify what was promised prior to the start of the project.

PERFORMANCE

Next, the final reports were read and the performance in relation to each deliverable was assessed based on what the grantees claimed to have delivered in their final report. A scoring system was used to rate performance: 1 = unsatisfactory, 2 = less than satisfactory, 3 = satisfactory, 4 = very satisfactory, 5 = exceeded expectations. In each case, a brief qualitative description of the promise and the outputs was recorded to justify the score awarded. Additional indicators that the grantees used to quantify the success of their own efforts were also recorded, such as tiger density, number of arrests, number of people taught, number of hectares acquired, etc.

Performance could generally be assessed by reading the proposal and comparing it qualitatively and quantitatively with the final report. In some cases, the project direction was modified during the course of the project with approval from STF, and the deliverable fields were modified accordingly. In many cases, however, the deliverables in the proposal were vague and proposed outputs were unquantified, making scoring of performance a fairly subjective task. To maintain inter-evaluator consistency, all performance scores were assigned by a single evaluator (BG). All scores were accompanied by a written justification summarizing the project outputs and outcomes.

The average performance was calculated for each dollar invested, giving a measure of the "bang per conservation buck."

$$\text{Performance per \$ spent} = (\text{Performance} \times \text{\$ invested}) / \text{\$ invested}$$

This was calculated for each category of deliver-

ables and then an overall performance figure was calculated for each project and for each grantee. In order to provide context for the meta-analysis, a qualitative assessment of tangible achievements and lessons learned over the last 10 years was compiled from each of the reports.

Landscape-level investments were broken out by conservation landscape (as defined in Sanderson et al. 2006) so that we could discern where prior investments had been made in relation to the 2006 conservation priorities. Grants were also classified according to Save The Tiger Fund's 2005 strategic plan, which has identified 11 priority landscapes where Save The Tiger Fund invests: Russian Far East, including adjacent habitat in northern China; Terai Arc Himalayan foothill forest and tall-grassland in India and Nepal; Eastern Himalayan forests and tall-grasslands anchored by Bhutan; tropical dry and moist forests in the Central Indian Highlands; Western Ghats of India; Sundarbans mangrove forest in India and Bangladesh; Myanmar's Hukawng Valley; Greater Tenasserim forest in Thailand and Myanmar; Lower Mekong forest; remaining Malaysian forest; and remaining Sumatran forest. Those grants that did not fall into any of these landscapes were classified as international grants and many of these affected more than one landscape or they were identified as important in the first tiger conservation priorities document and have since become low priority areas (Dinerstein et al. 1997).

The information from the final reports for each suite of projects in each STF landscape was used to determine the status of each tiger population using established guidelines on the application of the IUCN Red List Criteria at national or regional levels (IUCN 2001). An expert in each tiger landscape was contacted and asked to perform the classification independently to verify each status determination.

ASSUMPTIONS

An archival evaluation of this sort makes a number of important assumptions:

1) Grantees report their results honestly and have similar abilities to communicate their results back to Save The Tiger Fund.
2) Projects selected for support by the STF Council, based on proposals, will yield positive outcomes for tiger conservation if implemented in line with the proposals.

LEADERSHIP SURVEY

Strong leaders are a central part of any effective conservation program. STF supports emerging conservation leaders who are completing M.S. and Ph.D. projects that increase our understanding of tigers, strengthen tiger conservation throughout the landscapes, and provide opportunities for personal and professional development for emerging tiger conservationists.

But, what happens to these leaders when they move on from the project STF has funded? Do they remain in the conservation field, or do they drift to another type of work? When current leaders in the conservation field turn around and look behind them are there future leaders following in their pugmarks? Furthermore, what can we do as an organization, and as a part of the larger tiger conservation community, to support the emerging conservationists?

During the project evaluation period several proposals identified training of a future conservation leader as one of the project deliverables. All emerging conservation leaders specifically identified in final reports for these projects were flagged for follow-up surveys. The current contact details of 11 conservation leaders groomed with STF financial support were obtained using a web search, and these individuals were asked to complete an electronic survey consisting of nine questions to assess how important STF support was in their training and development and to find out if they were still involved in conservation work.

Overall Investment Patterns and Performance

A total of 59 different local and international organizations in 13 tiger range countries were awarded US$ 12.6 million from Save The Tiger Fund between 1995 and 2004. On average, grantees did achieve what they promised to do in their proposals and the average performance per dollar invested in each completed project was 3.36: slightly above the satisfactory mark.

When broken out by activity type, most of the funds (30%) were invested in research and monitoring activities to improve our understanding of tiger conservation needs (Fig. 1). This was closely followed by education and outreach activities (28%), then by anti-poaching activities (13%). The best-performing suites of activities have average performance scores greater than 3.5. They improved and protected tiger habitats, reduced tiger trafficking, and mitigated human-tiger conflict and each received about 5% of the total investments.

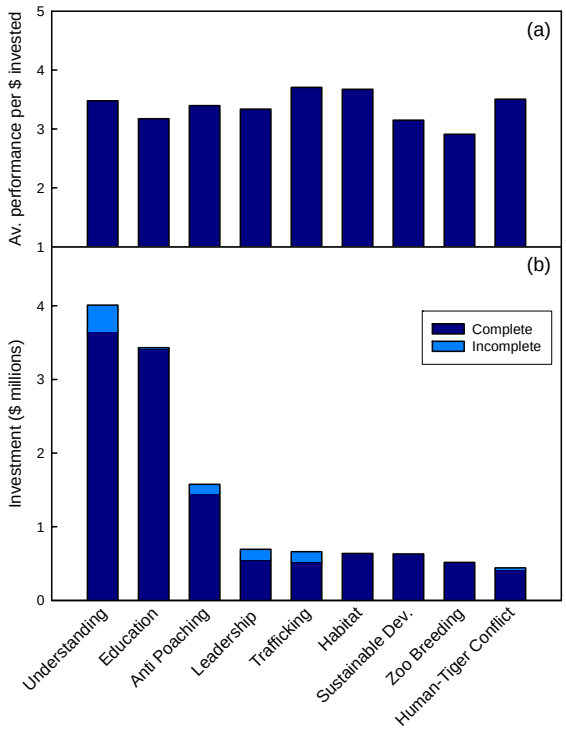

Fig. 1: The breakdown of $12.6 million Save The Tiger Fund investments between 1995 and 2004 (a) by the average performance of each dollar invested in each activity on a scale from 1-5 where: 1 = unsatisfactory, 2 = less than satisfactory, 3 = satisfactory, 4 = very satisfactory, 5 = exceeded expectations, and (b) by activity type.

Because performance measures were calculated and weighted by the amount of money invested, error terms could not be calculated for the overall performance charts. In any portfolio one would expect an approximately normal distribution of performance with some successes and some failures. From an evaluation perspective, these tails of the distribution are particularly valuable as they contain a wealth of lessons about successes and failures. The variability in performance is presented here in two distinct ways. Performance by dollars invested was calculated by tallying the number of dollars invested in activities within each performance category (Fig. 2). Performance by project is where the average performance per dollar spent was calculated for each project and rounded to the nearest whole number.

Both graphs appear very similar; they both have a weak beta distribution with a mode of "satisfactory," but the number of "more than satisfactory" projects strongly outweighs the "less

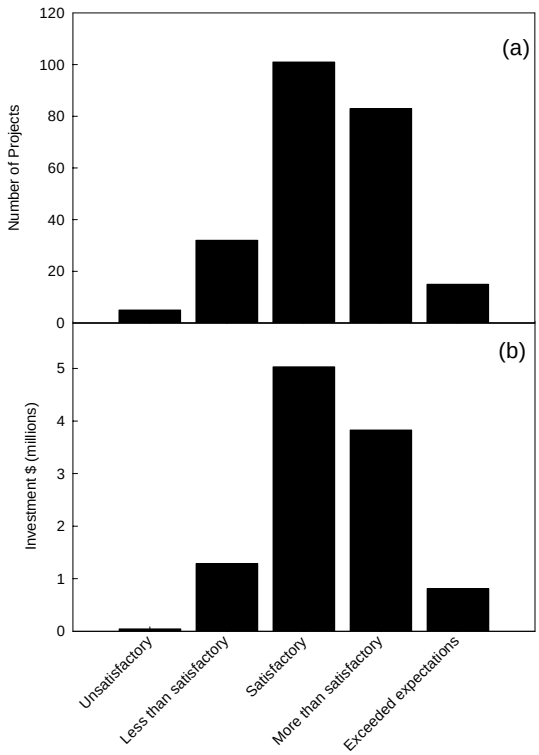

Fig. 2: Variation in performance of Save The Tiger Fund investments by project (a) and by $ invested (b). Performance was determined by comparing the promises made in the original proposals with what grantees claim to have delivered in their final reports.

than satisfactory" projects. This explains why the mean performance score was 3.27, rather than 3. Another important observation to make using these two figures is that the two "unsatisfactory columns" were not evenly matched (Fig. 2). This means that some STF projects truly did not perform as expected, but the actual dollar amounts invested in these "risky" projects were lower than average. Even though STF was willing to invest in high-risk grantees, these investments were made cautiously with lower than average dollar amounts (Fig. 2).

Closer examination of the low-scoring projects revealed few consistent patterns. They included projects by both local and international NGOs, grant awards ranged in size from $1,000 to $150,000, and they spanned most of the 10-year period. Detailed examination of the grant files suggests that the following factors were reasons for failure in one or more of the projects with an overall performance score below 2.5:

1) The grantee organization did not have the capacity to implement the proposal as outlined.
2) The grantee underestimated the magnitude or cost of a particular project.
3) Final reports were simply recycled from previous, closed grants.
4) New phases of multi-year projects were awarded before seeing the poor final reports from previous phase.
5) The grantee may have performed quite well – and this was documented by STF staff in field visit trip-reports – but the outputs were poorly communicated in the final report.
6) Failure to cooperate with or obtain the support of local government authorities or the military resulted in a dispute or an ineffectual project.
7) Accomplishments deviated significantly from the original proposal without approval from STF and resulted in work that was seemingly unrelated to tiger conservation.
8) A poorly defined proposal led to a weak, unfocused project.
9) The grant was used to buy high-tech equipment that was never used.
10) Although the proposed ideas were sound and the problem was well articulated, the work was conducted at an inappropriate scale and had negligible impact on the conservation problem.

Similarly, the very high-scoring projects (4.0 and above) were conducted by both local and international NGOs, with grant awards ranging from $4,000 to $250,000 and spanning most of the 10-year period. Detailed examination of the grant files suggests that the following factors were associated with one or more successful projects that scored 4.0 and higher:

1) Grantee built upon past successes, research, and lessons learned, and disseminated results through high-quality peer-reviewed journals.
2) A successful pilot project was implemented and was used as a model for replication elsewhere.
3) Multiple partners worked collaboratively to scale-up impacts and reduce duplication.
4) Sound adaptive management included monitoring activities that used biologically meaningful indicators.
5) Grantee had excellent support from the government and there were influential political sponsors of the program.
6) Program started using STF funds and eventually became self-sufficient, yielding greater successes well beyond the life of the STF grant.
7) STF continued to invest funds in projects that were affected by politically unstable situations – maintaining on-the-ground capacity and yielding sterling results even under difficult circumstances.
8) Research findings informed government policy and development plans and/ or lead to sizeable Global Environment Facility implementation grants.

One may have expected that, as the Save The Ti-

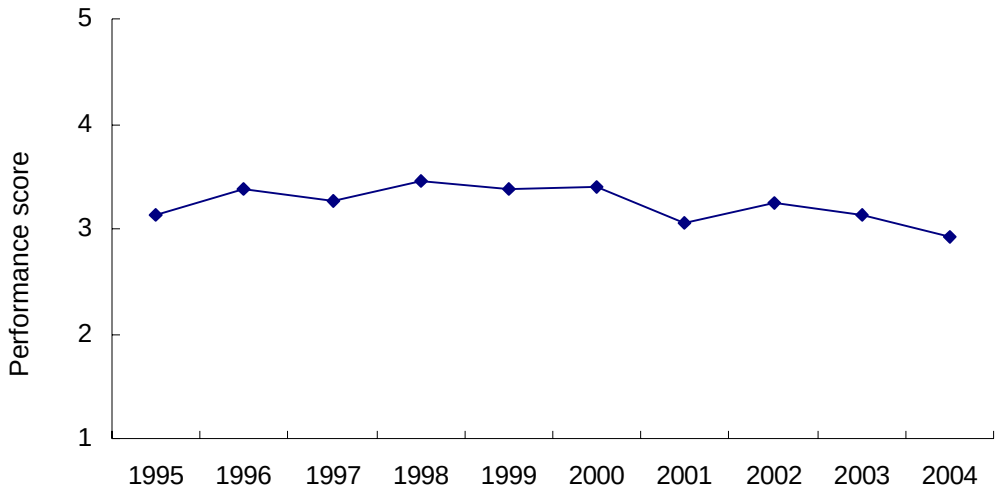

Fig. 3: Average performance per dollar spent by grantees over the first decade of Save The Tiger Fund.

ger Fund matured and as grantees became more experienced, average performance would have improved over time as poor performers were weeded out of the portfolio and as learning by grantees improved. However, there was no trend in average performance when comparing what was promised against what the grantee claims to have delivered (Fig. 3), but there is anecdotal evidence that grantees proposals have become clearer, with more quantifiable outputs over time (BG pers. obs.). The very explicit proposals were clearly seen as more competitive by the council. They were easier to evaluate and to classify into suites of activities, and resulted in more focused conservation actions on the ground.

About 70% of the investment was made in 27 NGOs that have an international presence, while 30% went to 33 in-country local organizations (Table 2). A two-sample t-test revealed no significant difference in average performance between international grantees (mean performance score = 3.13) and local NGOs (mean performance score = 3.01) ($t = 0.522$, 55 df, $p = 0.60$). The average grant size was $47,421 and most projects were awarded initially for a one-year period, but several projects representing over 60% of the financial investments were made up of multiple, one-year-long phases (Table 3).

INDICATORS

So far we have been able to describe the effectiveness of individual projects in relation to their original goals, and, on the whole, grantees did accomplish what they set out to do, but this gives no assessment of the benefits that their actions have had for wild tiger populations. Ideally, we should be able to synthesize the cumulative effects of individual projects at regional and national levels to obtain a measure of the cumulative impact. This should be a fairly straightforward tallying exercise that would allow us to assess the effects of all STF investments using a checklist of pre-defined indicators for each type of activity. The trouble is that without specific quantifiable programmatic goals, there is no limit to the universe of possible indicators. Grantees used different indicators as measures of success for similar activities and some even switched between indicators within the same long-term projects, making it difficult to determine cumulative effects.

Indicator Pitfalls

In addition to these problems, there were some recurring issues with indicator use:

Table 2: A breakdown of Save The Tiger Fund investments 1995-2004 by organization.

Organization	Award	No. Projects	Internat/ Local
American Zoo and Aquarium Association	$160,000	2	I
Bach Ma National Park	$10,000	1	L
Bangladesh Ministry of Environment and Forest	$70,000	1	L
Bhadra Wildlife Conservation Trust	$45,740	3	L
Cat Action Treasury	$251,000	4	L
Center for Coastal Environmental Conservation	$1,000	1	L
Center for the Protection of Wild Nature (Zov Taigi)	$135,000	4	L
Center for Wildlife Studies	$197,139	9	L
Conservation International	$25,000	1	I
Conservation of Wildlife and Heritage of Kodagu	$64,502	2	L
Dallas Zoological Society	$765,000	1	I
Dr. David Macdonald at Lady Margaret Hall	$17,970	1	I
Far Eastern Branch of Russian Academy of Sciences	$34,900	1	L
Fauna and Flora International	$145,000	3	I
Florida International University	$17,600	1	I
Global Survival Network	$278,965	6	I
Harsha Reddy, Contractor	$4,100	1	L
Hornocker Wildlife Institute	$865,800	7	I
Indonesian Zoological Parks Association	$20,000	1	L
Institute of Climbers and Nature Lovers	$4,315	1	L
International Rhino Foundation	$120,000	2	I
Kae Kawanishi	$125,000	2	I
King Mahendra Trust for Nature Conservation	$585,000	7	L
Kudremukh Wildlife Foundation	$35,938	3	L
Lazovsky State Nature Reserve	$150,000	6	L
Living Inspiration for Tribals	$21,419	1	L
Long Haymes Carr	$50,497	1	I
Malaysia Department of Wildlife and National Parks	$99,655	1	L
McCann-Erickson	$72,712	1	I
Ministry of Environment, Department of Nature Conservation and Protection	$49,000	1	L
Minnesota Zoo Foundation	$1,286,138	19	I
National Fish and Wildlife Foundation	$313,972	6	I
National Geographic Society	$86,000	1	I
Operation Eye of the Tiger - India	$130,000	3	L
Phoenix Fund	$459,092	10	L
Prakratik Society	$290,396	9	L
Ranthambhore Foundation	$169,000	7	L
Sikhote-Alin Biosphere State Reserve	$106,104	6	L
Smithsonian Institution	$300,000	1	I
Taman Safari Indonesia	$47,970	2	L
Tarun Bharat Sangh	$20,000	1	L
Thai Tiger Conservation Fund	$13,000	1	L
The Tiger Foundation	$64,640	1	I
The Wildlife Foundation	$50,000	1	L
Tiger Watch	$3,000	1	L
TRAFFIC	$302,429	4	I
University of Florida	$176,893	4	I
University of Minnesota	$339,353	9	I
Vidharba Institute of Mountaineering & Adventure	$14,000	1	I
Vidharba Tiger Research Foundation	$3,360	1	I
Wild Aid	$620,000	13	I
Wildlife Conservation Society	$1,767,180	34	I
Wildlife Foundation	$132,000	4	L
Wildlife Institute of India	$109,024	5	L
Wildlife Protection Society of India	$20,840	1	L
Wildlife Society of Orissa	$28,756	1	L
Wildlife Trust of India	$28,000	2	L
World Wildlife Fund	$1,034,537	23	I
Zoological Society of London	$263,000	6	I

Table 3: Long-term awards for tiger conservation from Save The Tiger Fund.

Duration of projects (years)	Amount invested	Number of meta-projects	Number of sub-projects
1	$5,154,906	102	102
2	$239,502	3	6
3	$1,115,367	9	23
4	$980,333	7	26
5	$2,764,525	10	46
6	$798,245	4	22
7	$420,760	2	11
8	$ -	0	0
9	$515,492	1	11
10	$611,805	1	10
	$12,600,935	137	254

1) *Poor selection of indicators* - Some indicators convey useful, meaningful information that can be used for future reference such as tiger density or sampling effort. Other indicators conveyed no useful information from an evaluation perspective; for instance, number of camera-trap photos taken.
2) *Some indicators can only be interpreted in context* - Several output indicators such as the number of children educated can only really be interpreted alongside other information describing participation, duration, and quality of the messaging, and in many instances that information was not provided. In these situations, indices that account for several different variables could allow us to compare outputs from different projects more meaningfully. In one case a grantee devised a law-enforcement index that performed this function, but it was used only once so cannot be used for comparison purposes.
3) *Duplicative counting errors* – One big problem relating to meta-analysis of the data presented in these final reports is that, in many instances, numbers may have been duplicated, resulting in double-counting of certain achievements. These problems fell into two major categories: 1) Within project duplication—one hypothetical example is a grantee maintained attendance lists for a series of five tiger-related seminars. Ten people attended each seminar and the grantee claimed an outreach to 50 people, even though it may have been the same ten people attending each time. 2) Between-project duplication—a hypothetical example of this problem is a two-year project that built biogas plants. The first final report to Save The Tiger Fund, indicated that 50 units were constructed, but in the second final report indicated that 75 units were constructed without indicating if this was a cumulative total for both projects or whether 75 units had been constructed in that year.
4) *Indicators vary in their level of specificity* – The level of detail provided by some indicators is excellent, but they are clearly subsets of more general indicator types used by others. For example, the number of schoolchildren taught rolls up into a more commonly used indicator – the number of people taught. Similarly, some grantees report the nature of arrests, fines, and confiscations connected to their anti-poaching activities in detail, while others simply lump all this information under the category of "incident reports."
5) *Outputs are well quantified, but outcomes are seldom considered* – The number of arrests, fines, or confiscations are frequent indicators for law enforcement projects, but the desired outcome of reduced number of poaching incidents is seldom examined. One would ordinarily expect the deterrent effects of an anti-poaching campaign to vary from place to place depending on the harshness of

penalties, the value systems of surrounding communities, and global demand for tiger parts, none of which are captured by a simple measure of number of arrests. Due to the illegal nature of poaching incidents, it is very difficult to get an accurate reading of the actual rate of poaching.

6) *Sources of bias and accuracy are often not considered* – Several grantees readily used various indicators such as the number of poaching incidents recorded as measures of their effectiveness in anti-poaching work. If the area, amount of effort (patrol days), and methods used to detect poaching incidents are kept constant from year to year, this would be a useful indicator to assess poaching trends from year to year. However, most grantees reported programmatic changes such as increased area patrolled and increased rates of patrolling over the period without considering the impact of these changes on their indicators and thus the data presented can only provide anecdotal reflections of the actual poaching rates.

OUTCOMES BY ACTIVITY TYPE

Understanding

These activities directly mitigate a threat identified in the STF strategic plan: *Insufficient knowledge of what tigers need to survive in the changing landscapes of Asia and inadequate strategies and tools to meet those needs* (STF 2005).

Indicators and outcomes - Detailed examination of projects designed to improve our understanding of tiger's needs revealed several groups of similar indicators (Table 4). The most popular indicators used by grantees were: tiger density; number of tiger photos; number of peer-reviewed publications; number of tigers counted; number of camera-trap days; conference attendance; and number of camera-trap photos (including non-tiger species) (Table 4). One key component of research-type projects is building capacity to continue and improve upon our knowledge through training and dissemination of results. The actual monitoring and research-type indicators communicated the effort devoted to monitoring activities, the accuracy of results, as well as actual measures of the health of tiger populations, their prey, and their habitat.

Camera trap survey in Laos – STF has invested considerable resources in pioneers who developed methods to accurately monitor tiger numbers that are now used throughout their range (*Photo credit: WCS Laos*).

On the whole, grantees were very diligent about publishing results in peer-reviewed journals, resulting in an illustrious body of literature consisting of more than 100 publications in several languages that has made a significant impact on tiger conservation in the last decade (Appendix B). An important feature of this list is *Riding the Tiger: tiger conservation in human-dominated landscapes* (Seidensticker et al. 1999), which is the most definitive collection of academic papers on tiger conservation. It was compiled as a result of meetings sponsored by Save The Tiger Fund and incorporates work and findings from many STF grantees. *Riding the Tiger* was originally published by Cambridge University Press and has been reprinted in Russian and Bahasa Indonesian.

Some researchers have demonstrated excellent potential to leverage conservation action. Their work has been effectively disseminated to influential audiences that led to larger implementation grants or informed government policy resulting in meaningful changes for tiger conservation. STF's research and understanding investments often complement the work of government agencies that have limited resources and view monitoring as a luxury rather than an essential ingredient

Table 4: Indicators used to report success of efforts to increase our understanding of tigers ecological requirements

Method Category	Method Sub-category	Indicator	No reports
Capacity	Dissemination	No. peer reviewed publications	12
		No. books published	4
		Posters presented	1
		No. books printed and distributed	1
		Conference attendance	9
		No. training manuals written in local language	2
		No. books distributed	1
	Training	No. reserve staff trained	7
		No. trained scent dogs	3
Monitoring	Accuracy	Accuracy of tiger identification by scent dogs (%)	3
	Effort	No. camera-trap days	9
		No. tiger photos	10
		No. camera trap photos	8
		No. tigers sighted	2
		No. camera traps	4
		No. survey respondents	5
		No. forensic tiger samples gathered	1
		No. prey spotted	1
		No. tigers radiocollared	7
		Area of landscape mapped (km2)	6
		Area of landscape surveyed (km2)	7
		No. man-days of field work	1
		Tiger scats collected	2
		No. survey routes	2
		No. times survey routes sampled (intensity)	2
		No. prey radiocollared	1
		Total years of radiocollaring tracking data collected	1
		No. parks surveyed	1
		Sets of tiger tracks recorded (per year)	2
	Habitat	Density of trees (no/km2)	1
		Deforestation rate	1
		Forest cover (km2)	1
		Rate of forest loss (km2)	3
		% of protected area cultivated	1
		Density humans in landscape (no/km2)	2
	Prey	Prey density (prey animals/km2)	6
	Tigers	Tiger density calculated (no /100km2)	10
		No. tigers counted	9
		Presence/absence tiger information	2
		Trend in tiger numbers	2

needed to inform adaptive management. Focusing the bulk of the resources on these activities is justified, given the wider political framework and needs within each landscape.

Best practices - Research and monitoring projects that improve our understanding of tiger populations and ecology have yielded some very beneficial conservation outcomes that go far beyond the output-related indicators described in Table 4. Monitoring programs in the Russian Far East have been well supported by Save The Tiger Fund over the last 10 years and this research has shown that the Amur tiger population in Russia

has stabilized at about 450 individuals and has remained at that level over the last 10 years (Handwerk 2005). This information is simply not available for any other landscape, but is vital as it provides a benchmark demonstrating that the collective actions of conservation organizations in the region have stabilized the Amur tiger population. Evidence points to severe declines in many other parts of its range, but we are largely dependent on anecdotes and expert opinion for this information rather than census data. In the Russian Far East, a landscape-level vision has been developed and monitoring is carried out through a single high-intensity census effort that involves the collaboration of multiple agencies on a regular basis using consistent methodology across the entire landscape. This model should serve as a best-practice example for other landscapes.

Many protected areas staff are severely overworked, with limited human and financial resources that constrain their ability to conduct effective research. Thus research projects that are developed in cooperation with government representatives have proven to be complementary to existing government programs. They have also demonstrated enormous potential to influence government actions and policy. In several instances, the research and planning by STF grantees has lead to larger implementation grants from the Global Environment Facility, and improved parks management or planning. STF has supported the development of several Tiger Action Plans, or their equivalent for entire countries.

Even small research projects, which at the outset failed to generate the necessary responses to save imperiled tiger populations, can lead to lasting, positive outcomes. In 2002, an Indian research project demonstrated that tigers in Sariska Tiger Reserve were declining and on the brink of extirpation. The grantee also pointed out the disparity between inflated official tiger census results and the declining number of tiger sightings noted by park staff. In 2005, when the news broke that tigers were extinct in Sariska, these observations were used to expose the weaknesses of past park management and tiger census methods (Narain et al. 2005). This appears to have been the tipping point leading to a countrywide response involving the highest levels of government that will hopefully result in improved management and census methods throughout India.

Lessons learned – Poor dissemination of results was the primary weakness of projects designed to fill knowledge gaps in our understanding of tigers, their prey, or habitats. Despite the excellent overall track record of grantees in this area, it must be noted here that many studies were never published, nor were meaningful data presented in the final reports to STF. Reasons for not publishing research varied. Most straightforward tiger density surveys to measure tiger population size would be of no interest to academic journals, but the information is crucial to management officials and donors. Hypothesis-driven research may not have been published due to difficulties at peer-review, language barriers, poor research design, constraints of time, lack of incentives to publish, or a reluctance to expose issues that may be politically sensitive.

Considerable amounts of time and effort were spent on gathering data, but they were not always analyzed. For example, one grantee reported how many tiger photos were taken within a certain area, but did not make the small, but crucial effort to calculate the tiger densities using standardized mark-recapture methods. It is imperative that all final reports include a preliminary analysis of results, especially if one of the project aims was to survey tigers, prey, or habitat in a particular area. In this way, the information is retained on record and can be disseminated via the STF website for use by third parties who may be working in the area and looking for baseline information, or for those working on larger landscape-level analyses.

Several research projects used poor methods, had weak dissemination plans, and/or poor relations with government officials or other NGOs that reduced the impact of these investments. Future monitoring-type investments should use proven methods that are used consistently over time and throughout the wider landscape. They must also

be explicitly linked to conservation actions or a longer-term adaptive management plan that can realistically lead to increased tiger numbers.

Education

Education projects are one of the key tools to mitigate the fourth main threat to tigers in the strategic plan: *lack of recognition and visibility to mobilize multi-sector support.*

STF has funded many tiger education projects throughout the tigers range, such as this one in the Russian Far East *(Photo credit: Phoenix Fund)*

Indicators and outcomes - STF funded many activities that built conservation education capacity within tiger landscapes such as construction of schools or environmental education centers, development of teaching capacity, development of conservation curricula in schools, as well as more general public outreach using awareness materials, events, and the media. The most popular indicators used by grantees were the number of newspaper/ magazine articles that they had gotten placed dealing with their tiger conservation program, the number of people taught, the number of schoolchildren taught, the number of teachers taught, the number of festival event participants, and the number of films produced (Table 5). The final reports suggest that the cumulative outreach of their tiger conservation messages was hundreds of thousands of individuals, but there were a large number of different potential indicators used to determine outreach. Each activity had varying quality and duration of the messaging, making cumulative outreach estimates a poor indicator of STF's overall impact.

Best practices - Many education campaigns targeted teachers, providing them with information, ideas, and materials to use in their classes, with the understanding that the time invested in teachers, rather than in students, would have a large multiplying effect, but the effectiveness of these strategies has not been evaluated in any STF grants. Similarly, few education programs followed through with an assessment of their impact on people's attitudes and behavior, which must largely be taken on good faith. One exception, however, clearly demonstrates the value of these education programs. A Chinese "model school" program was started in the year 2000. It persuaded "model schools" to make conservation-related extra curricular activities a priority. By 2004, the "model school" program had grown to incorporate 55 schools, and attitudinal surveys demonstrated that "model school" children had significantly improved attitudes towards wildlife and conservation over comparison groups (Zhang & Li 2004).

Lessons learned – A few education projects were very general, such as building a school or providing scholarships to individuals, which were in themselves good education activities but were not linked to any direct conservation outcomes, and these should be discontinued. Most education projects were targeted at improving conservation knowledge within communities. In these, the implicit conservation outcome was to change human behavior, although behavioral changes were only documented in one project. Education activities will be a necessary component of STF grants, but care must be taken to ensure that the messaging is appropriate and conducted in a way that will lead to effective behavior changes that can be evaluated. STF can take advantage of an excellent publication that it funded, *Targeting Behaviour: Developing conservation education, communications and advocacy programmes with the participation of local communities* (Matarasso 2004), which is freely available on the Internet and can be disseminated to future grantees working on education projects.

Table 5: Indicators used to report success of environmental educational projects.

Method Category	Method Sub-category	Indicator	No. reports
Capacity	Cooperation	Ecoclubs formed	6
	Curriculum	Schools with conservation curriculum	1
	Infrastructure	Schools built	3
	Training	Ecotourism guides trained.	2
		Teachers taught	7
Outreach	Book	Books distributed	6
		Books published	6
	Event	Play runs	1
		Festival participants	7
		People participating in competition	5
		Writing competition entrants	1
		Exhibit venues	1
	Giveaways	Calendars distributed	2
		Posters distributed	5
		T-shirts distributed	4
		Bookmarks distributed	1
		Brochures distributed	4
		Leaflets distributed	6
		Audio cassettes distributed	1
		Pages brochure	1
	Monitoring	Questionnaires completed	1
	Newspaper	Newsletter copies distributed	2
		Circulation of magazine/newspaper with tiger-related article	4
		Newspaper/ magazine articles	20
		Newsletter issues produced	2
		Journalist interviews	3
	Radio	No. times radio public service announcements (PSA's) aired	4
		Radio interviews	2
	Teaching	Children attending nature camps	4
		Children attending school	1
		Eco-club members	3
		Families educated	1
		Judges educated	1
		Lectures/classes/workshops	5
		Nature camps held	5
		Participants combined with course duration	2
		People taught	17
		Scholarships funded	2
		Schoolchildren taught	9
		Slide shows given	5
		Hours of lectures	2
	Telephone	People calling hotline (per month)	1
	TV/ Film	Videos screened	2
		Copies of DVD distributed	1
		Length of film (min)	1
		Films produced	7
		Households potentially affected by PSA	1
		Times TV PSA's aired	1
		TV channels screening PSA	2
		TV PSA's produced	5
		TV screenings of PSA/film	5
		Viewers reached by PSA	1
		TV news reports	2
	Website	Gigabytes of data transferred per month	1
		Unique web users (per month)	4
		Unique website users (per year)	3
		Website pages written	2
		Website hits (per month)	4
		Websites established	2

One can't assume that the messaging developed by grantees is entirely focused on tiger conservation or is of a consistently high quality. In some cases, grantees have reported that they conducted education campaigns that focused on general conservation issues or species other than tigers.

Sometimes grantees tackled problems at very localized scales that couldn't possibly have had much effect. For example, one project was designed to educate judges about tiger conservation with the hope that sentences would increasingly reflect the gravity of wildlife-related crimes and hence deter more people from poaching. The proposal did not state how many judges were going to be educated, and the work all appears to have been done quite satisfactorily, having educated 19 judges about the complexity of wildlife crime and CITES issues. These 19 judges represent 0.2% of a population of 8,500 judges in India (which is the target population outlined in the proposal). This project may have been appropriate if it were a pilot for a wider campaign aiming to educate significantly more judges in states with large tiger populations, or if it targeted a smaller number of judges that handle large numbers of wildlife-crime related cases, but it is difficult to see how this project could have made any meaningful impact in relation to the case statement contained in its proposal.

Anti-poaching

Anti-poaching activities directly reduce the first threat identified in the STF strategic plan: *People continue to kill tigers*. They also reduce the second one: *People continue to destroy, fragment, and degrade existing and potential tiger habitats and overkill the tiger's prey.*

Indicators and outcomes – Anti-poaching activities are designed primarily to deter would-be poachers from removing tigers and their prey from landscapes. In many cases tigers are caught by snares set to trap ungulates, and research has demonstrated that reduced prey populations support lower tiger numbers (Karanth & Stith 1999). Anti-poaching activities included monitoring poaching incidents, outreach to hunters, provision of incentives to enforcement officers, enforcement activities, and increasing anti-poaching capacity of reserve staff through training and provision of equipment. The most popular indicators used were number of poachers arrested, value of equipment supplied, number of staff trained, number of full-time anti-poaching staff, and number of patrol days (Table 6). Overall, STF has supported a large number of anti-poaching projects over long periods of time in most tiger landscapes, and the outcomes have been very mixed depending on the landscape and the grantee.

Anti-poaching park guard crossing a river in Cambodia (*Photo credit: WildAid*)

Best practices – There are two distinct kinds of poaching, that may require different sorts of approaches from conservation perspective. Those poaching for an external market or for sport tend to be well organized, connected to the outside world and possibly have high powered connections (e.g. military) as opposed to poaching on a subsistence level or in self-defense. This should be borne in mind when looking for best-practice methods to curb poaching.

The deterrent effects of anti-poaching work were extremely difficult to ascertain because of the illegal nature of poaching activities that by their very nature are secretive and not amenable to monitoring. While some poaching indices, such as snares recovered, are potentially useful indicators, there are always at least two possible reasons for decline in poaching incidents: one is the increased deterrent effects of strengthened anti-poaching operations; and the other is decreased

Table 6: Indicators used to report success of anti-poaching activities.

Method category	Method sub-category	Indicator	No reports
Monitoring	Incidents	Tiger poaching incidents reported	4
		Poaching incidents	3
Outreach	Behavior	Contracts signed with hunters agreeing not to hunt in reserve	1
	Morale	Value of performance awards to enforcement staff ($)	6
		Scholarships to forest guard children	3
Enforcement	Arrest	Poacher arrests	18
		Dealer arrests	1
	Confiscation	Snares removed	5
		Guns confiscated	5
		Sawmills dismantled	4
		Chainsaws seized	3
		Logs confiscated	2
		Animals rescued	2
		Vehicles confiscated	1
		Poached animals confiscated	1
		Kilograms of wood confiscated	1
		Tigers rescued	1
		Tiger parts confiscated	1
	Conviction	Conviction rate of poachers	3
		Length of prison term for convicted poachers	1
	Investigation	Investigations	2
	Patrol	Patrol days	8
		Hectares effectively protected	5
		Anti-poaching units formed	4
		Patrols	3
		No. km patrolled	3
		Anti-poaching man-hours	2
		Wildlife crime enforcement index	1
		Vehicles inspected	1
Capacity	Equipment	Value of equipment supplied to reserve staff (US$)	16
		Anti-poaching vehicle fuel efficiency (km/l)	1
	Infrastructure	Anti poaching outposts	5
	Manpower	Full-time anti-poaching staff	8
	Training	Anti-poaching staff trained	11
		Local language wildlife crimes manuals published	1
		Local volunteers trained in anti-poaching	1

availability of ungulates and other species targeted by poachers, leading to diminishing returns accompanied by a reduced effort. Clearly, anti-poaching operations need to take account of both the animal populations and poaching incidents. The best examples of anti-poaching work have either incorporated scientifically sound wildlife monitoring programs into their methods, or are the result of collaboration between two groups, one focusing on wildlife monitoring and the other focusing on anti-poaching. For example, a project in Sumatra identified declining tiger and prey populations in the southern part of Bukit Barisan Selatan National Park and was used to inform anti-poaching activities carried out by another organization.

About two thirds of projects that provided equipment or infrastructure such as outposts did not report on how the new equipment helped them to improve their anti-poaching duties. However, the remaining grantees did provide good anecdotal or quantitative evidence demonstrating how the equipment enabled anti-poaching patrols to cover larger areas covered, improved communications, or reduced numbers of poaching incidents.

Lessons learned – There were several different examples of community ranger-type projects where locals were employed to patrol and assist law enforcement officers in a particular area. Even if the work conducted by these groups had the approval of parks authorities, the enforcement units could not carry weapons or make arrests, and therefore could not tackle armed poachers

directly. On a related point, some grantees had the authority to make arrests, but were out-ranked when it became clear that the poaching rings were run by military officers. In Cambodia, STF invested $335,000 dollars in anti-poaching activities but despite these investments, if the military was involved in poaching rings, little could be done to stop them. Thus enforcement proved to be very difficult and politically sensitive and several monitoring reports indicated that tiger numbers have been declining very sharply over the last 10 years (Dinerstein et al. 2006).

In some areas anti-poaching work has been very effective, but once enforcement activities begin, they must be funded consistently and continuously in order to remain effective. Some have argued that the enforcement of laws is the responsibility of the state and that funding NGOs to perform any law-enforcement work other than training or capacity-building is creating a dependency cycle. Nonetheless, NGO anti-poaching work has led to some significant benefits for tigers. Tiger patrol teams run by NGOs have proven to be very nimble and effective in certain areas and have even uncovered the involvement of corrupt state officials and lead to their prosecution.

It is unclear what effects the morale-improvement projects had on park staff in any STF grants because no baseline indicators of work performance or morale were given. While it is clear that park rangers have dangerous and sometimes demoralizing jobs, the short-and long-term conservation outcomes of morale-improvement schemes (e.g., awards, provision of life insurance for a year, scholarships for park staff, or provision of field kits) are uncertain. Staff welfare issues should probably be addressed more systematically at higher park-management levels in order to come to long-term and sustainable solutions that ensure that personnel are adequately compensated. To counterbalance this point, some grantees have noted that high turnover of staff in low-paying and dangerous law-enforcement work undermines investments in training. While it was not quantified in any projects, staff turnover would be a critical factor to examine in future projects, especially those that involve training, to ensure that capacity is retained for the longer-term conservation benefit.

Sustainable development

Sustainable development projects seek to mitigate the second threat identified in the STF strategic plan: *People continue to destroy, fragment, and degrade existing and potential tiger habitats and over kill the tiger's prey.*

Indicators and outcomes - Save The Tiger Fund has recognized that conservation activities cannot happen in a vacuum, and that wider political and grassroots support from people living in tiger landscapes is essential to provide lasting conservation solutions. Sustainable development activities have ranged from improving well-being through development of alternative livelihoods, community health programs, resettlement assistance, alternative energy sources, and formation of village resource committees (Table 7). The most popular indicators for these projects were the number of biogas plants built and the number of contraceptive devices distributed as part of voluntary family-planning programs.

A functioning biogas stove in the Terai Arc Landscape, Nepal (*Photo credit: WWF*)

Best practices – When examining the portfolio, it was clear that some activities would more directly impact conservation objectives than others. For example, the use of biogas plants would reduce pressure on nearby forests. Provision of stall-fed cattle would reduce pressure on forests and reduce the risk of cattle being killed by ti-

Table 7: Indicators used to report success of sustainable development activities.

Method category	Method sub-category	Indicator	No Reports
Capacity	Equipment	Value of equipment provided ($)	3
	Manpower	Forest protection committees	1
Outreach	Education	Village meetings hosted	4
		Meetings with govt. officials	1
Resource use	Energy	Biogas plants constructed	9
		Families converting to cooking gas	2
		Improved cooking stoves built	2
	Livelihood	People adopting alternative livelihood schemes	1
		Solar lanterns distributed	2
		Stall-fed cattle/pigs/goats distributed	4
		Agricultural training centers established	1
	Re-afforestation	Plant nurseries established	2
		Trees planted	3
Well-being	Family planning	Condoms distributed	5
		Oral contraceptives distributed	5
		Volunteers sterilized	5
		Reduction in local birth rate	5
	Health	Patients attending clinic	4
		Toilets constructed	1
	Resettlement	Volunteers resettled	2
		Families volunteering for resettlement	4
		Proportion of families voluntarily resettled	2

gers, therefore reducing human-wildlife conflict. Tree nurseries that supplied seedlings for habitat restoration work yielded income for communities. The most successful of these schemes is found in the Terai Arc Landscape but the projects have provided only anecdotal evidence that they have led to direct conservation outcomes, such as reducing human pressure on habitats in protected areas. On-the-ground reports indicate that despite the recent political instability caused by Maoist insurgents in Nepal, the communities living in buffer areas continue to provide grass-roots support for conservation, even though central government control was weakened in the affected areas (Seidensticker & Lumpkin 2006).

Lessons learned – Many sustainable development-type activities have very indirect effects on conservation; for example, human health projects may improve human well-being. Proponents argue that improved livelihoods will ultimately lead to improved livelihoods for tigers, but do not consider a host of other confounding factors such as rural-urban migration. On the same note, it is difficult for a conservation specialist to evaluate human health-care programs, but in this evaluation, these grants often scored very high because they accomplished exactly what they set out to do and often exceeded their stated goals. Given the multitude of other funding sources for health and human-development-type projects, STF could better serve tiger conservation by focusing on activities that yield more direct conservation outcomes, and try to coordinate with development agencies to complement other sustainable development investments.

Several projects with large sustainable development components had multiple objectives, and several funding sources. STF's reporting requirements were not adequate to track leveraged funds or distinguish which components of each project were funded by which agency, resulting in a good bird's-eye-view of the work and its context, but weak transparency and accountability.

Habitat

Habitat-related grants work to mitigate the second threat identified in the STF strategic plan:

People continue to destroy, fragment, and degrade existing and potential tiger habitats and over kill the tiger's prey.

Indicators and outcomes – Habitat activities focused on the acquisition and consolidation of land, and habitat restoration and management (Table 8). The most popular indicators used for these activities were number of trees planted, hectares restored, and hectares managed for conservation.

Nursery for habitat restoration activities in Nepal (*Photo credit: WWF)*

No STF funds were specifically allocated to purchase private land for conservation purposes as systems of land tenure in Asia represent a difficult and politically charged minefield to cross. Even if private land acquisitions were an option, STF's resources would probably not stretch very far using this model. Nevertheless, grantees working in Myanmar convinced the government to create the Hukuang Valley Tiger Reserve. At more than 2 million hectares, this is the largest tiger reserve in the world. In the Russian Far East, STF supported grantees who worked with the government to get the Sikhote-Alin Biosphere Reserve extended by 67,000 hectares. In the Western Ghats, families living inside tiger reserves volunteered to take government resettlement packages and were assisted by Save The Tiger Fund, resulting in the decolonization of prime tiger habitat, while in the Terai Arc Landscape, more than half a million trees were planted to restore 5,000 hectares of buffer zone areas for community use that reduced pressure on forest resources in core protected areas.

Best practices – Habitat-related activities had the best suites of indicators that represent clear outcomes for conservation, and the few habitat-related projects fared very well in the evaluation, with grantees often exceeding clearly stated goals. The habitat-acquisition and restoration work has clear long-term benefits, assuming that management is adequate. In the Terai Arc Landscape, grantees report that degraded lands that once acted as barriers to tiger dispersal are now restored corridors or buffer zones surrounding core protected areas and that tigers are using the new habitats; however, this also increased the frequency of human-tiger conflict cases. Work in the Terai Arc and the Russian Far East has achieved notable successes by developing detailed landscape-level visions and implementation strategies that in both cases have protected tigers in core areas and allowed tigers to move between core areas through forested areas with carefully managed levels of human use. This model successfully allows us to maintain a genetically viable tiger population at a landscape level (Wikramanayake et al. 2004).

Lessons learned – The involvement of park management in NGO-run habitat management schemes is a key ingredient to the success of this kind of conservation work. Without good management and clearly demarcated landuse plans that have buy-in from the local people, parks exist on paper, but in practice continue to be degraded. There are several recently developed indices that have been used to measure the effectiveness of management in protected areas (Hockings 2003; Parrish et al. 2003). These approaches have not yet been adopted by grantees to evaluate the performance of their management approaches in tiger landscapes.

Leadership

Leadership development grants aim to mitigate the third threat identified in the STF strategic

Table 8: Indicators used to report success of habitat-related activities.

Method category	Method sub-category	Indicator	No Reports
Land	Acquisition	Ha land declared national reserve by government	3
		Ha land identified for priority acquisition	1
		Ha land acquired for conservation (permanently)	3
		Money leveraged to acquire habitat for conservation (US$)	2
	Consolidation	Ha land consolidated through corridor/ acquisition	2
Habitat	Management	Ha managed for conservation (per year)	6
		Ha community forest fenced to exclude livestock	1
		Ha firebreaks maintained	1
		Fires extinguished	1
	Restoration	Native tree seedlings planted	7
		Ha degraded buffer zone land restored	6
		Nurseries established	1
		Ha corridors restored	1
	Resettlement	No. volunteers resettled	2
		No. families volunteering for resettlement	4
		Proportion of families voluntarily resettled	2

plan: *Insufficient knowledge of what tigers need to survive in the changing landscapes of Asia and inadequate strategies and tools to meet these needs.*

Leadership survey results – Seven out of the 11 identified conservation leaders responded to the survey. All seven leaders are currently in the conservation field; four focus mainly on research, two are advisors to government and ministers, and one is the Director of Save The Tiger Fund. Five of the seven are involved directly in tiger conservation.

Six out of the seven respondents indicated that STF support helped them to obtain their current position.

The respondents were asked to rate the training/ support they received through the Save The Tiger Fund-supported project using the following scale: 1 = not at all helpful, 2 = not very helpful, 3 = somewhat helpful, 4 = very helpful. Five out of the seven respondents rated the training and support through the STF-supported project as a 4 = very helpful. One respondent did not answer the question, and one rated the training as 3 = somewhat helpful. One respondent noted:

"If the work is full of challenges, sacrifices, frustrations, disappointments and nothing else, the mission will not last our lifetime. Truly happy exhilarating rewarding moments are rare, and we usually experience this alone in the woods somewhere."

We also asked about successes and difficulties related to tiger conservation. Of the many successes listed by the respondents, several mentioned they have been elevated to leadership positions, increased understanding among resident populations on ecosystem and economic well-being, increased tiger habitat, increased the understanding of what tigers need in order to survive in specific landscapes, and worked to bring stakeholders in tiger habitat together.

The difficulties faced by tiger conservationists are often multi-dimensional and magnified by the isolation inherent in tiger conservation. Some difficulties are more political in nature, and beyond the sphere of influence of STF. Some of the main difficulties mentioned include:

1) Unstable governments and field conditions.
2) Inaccessible or corrupt government departments.
3) Raising funds for small projects.
4) Lack of coordination among conservation partners and/or institutional agendas that keep people from coming together even though they share

the same conservation goals.
5) Establishing a standard and scientifically rigorous monitoring system.
6) The pace of habitat loss due to illegal land encroachment and lack of resources for an effective enforcement program.

One of the main issues encountered by the Save The Tiger Fund is how the tiger conservation community can best develop and support new conservation leaders. The most common theme that emerged was to continue to train and support emerging leaders in the tiger range countries. This support included not only the ongoing financial support for education and research projects but also the need to provide a strong network of academics, conservation professionals, and institutions to help them continue their conservation efforts. Some of the suggestions included:

1) Tiger conferences: *"I think many of us in the field often feel alone in our battles, and a big gathering in the form of conference or symposium helps, besides information exchange, solidify the fellowship in tiger conservation… if we can do this every two years, large conservation organizations such as WWF and WCS can easily budget this in their annual operational cost and funding agencies like STF, CEPF, and others can provide travel awards to needy independents."*
2) Provide recognition: *"Tiger rangers will never achieve the position of leaders in the vertical hierarchy of the bureaucracy. But an international recognition (in the form of award with small token) of the commitment and dedication of some of the best tiger rangers in every tiger ranger state would be really nice."*
3) Grant management: *"By identifying the genuine tiger conservationists (and providing them) continuous support and resources until the goals are attained."*
4) Multi-faceted approach to tiger conservation: *"The domain of investigation ought to be expanded to beyond strictly a biological or ecological approach (with a) more interdisciplinary philosophy to guide work."*
5) Create and manage networks: *"Building strong network among academics, conservation professionals, and institutes involved in conservation matters."*
6) Support emerging conservationists: *"There is a need for encouraging and training new conservation leaders in the range countries. Once they are trained in the developed countries it is necessary to help them continue their conservation efforts. Training them and expecting them to continue on is not going to work. It is important to build an environment to get them involved in tiger conservation."*

All of those surveyed are still in the conservation field, and five are working directly on tiger conservation. The difficulties they face are considerable, but, as their many successes demonstrate, they find ways around the obstacles and are obtaining encouraging achievements in tiger conservation. They do feel STF and other conservation organizations should provide not only monetary support, but mentoring and coordination as well for emerging conservationists. As one of the respondents wrote, *"Knowing some of the council members, I think STF is more than an agency that manages and hands out funds."*

Indicators and outcomes – The primary focus of these activities was to build tiger conservation capacity by grooming future tiger conservation leaders through specific leadership training programs or post-graduate degree courses (Table 9). The most popular indicators for these kinds of projects were number of locals trained in a conservation course, the number of local leaders named and groomed, and the number of workshops held.

Table 9: Indicators used to report success of leadership-development activities.

Method Category	Method sub-category	Indicator	No Reports
Capacity	Dissemination	Local language conservation manuals made available	1
		Peer reviewed papers published	1
	Performance	Class grades	1
	Training	Local leaders named and groomed	7
		Locals trained through course	12
		Workshops training courses held	8
		Govt staff attending workshops	4
		Masters students graduating	4
		NGO's represented at training courses	1
		Internships completed	1
		Student projects funded	2
		PhD students graduating	2
		Length of training course	1

Best practices – Students trained at M.S. and Ph.D. levels had to do on-the-ground research. It was relatively easy to track down these individuals even long after the grant had finished. The thesis work often provided valuable insights into their chosen research topic in great detail, giving a high degree of confidence in the quality of training and skills acquired. Receiving a post-graduate degree does not necessarily imply that the individual will have good leadership skills, but the relationships and skills acquired during the training would clearly be valuable assets to students that they could use for the rest of their lives.

Lessons learned – Most of the short leadership-training courses did not focus on leadership skills. Instead, conservation experts trained small groups of people on some aspect of conservation. The quality and applicability of these kinds of projects was difficult to ascertain given that individual "leaders" were not mentioned in some final reports and the impact of short courses is very difficult to ascertain.

Trafficking

Trafficking-reduction activities mitigate the first threat identified in the STF strategic plan: *People continue to kill tigers.*

Indicators and outcomes – Grants were awarded to reduce trafficking of tiger parts, increase capacity of enforcement officials and customs agents, monitor trade, conduct enforcement activities, and educate targeted consumer groups (Table 10). The primary aim of these kinds of projects is to reduce demand for tiger parts in consumer countries and to increase the obstacles and risks faced by poachers and smugglers supplying these markets. The most popular indicators for these projects have been the number of Traditional Chinese Medicine (TCM) practitioners educated, number of international agencies participating in investigations, number of tiger parts confiscated, and the number of trader arrests.

Confiscated home-made gun and tiger bones in Sumatra (*Photo credit: FFI).*

Best practices – This suite of grants performed remarkably well, and many of the educational projects had a strong focus on changing the behavior of people who consume tiger parts. Sev-

Table 10: Indicators used to report success of efforts to reduce trafficking of tiger parts.

Method category	Method sub-category	Indicator	No reports
Capacity	Cooperation	International agencies cooperating in investigations	5
	Dissemination	Identification of endangered species booklets distributed to customs officers	2
		Trafficking publications	2
		People attending conference	4
	Equipment	Value of equipment supplied to customs officials	1
	Training	Customs officials trained	4
Enforcement	Arrest	Wildlife crime-ring busts (per year)	1
		Trader arrests (per year)	5
		Corrupt officials arrested (per year)	1
	Confiscation	Tiger parts confiscated (per year)	5
	Conviction	Traffickers sentenced (per year)	1
	Investigation	Days of staff time spent on tiger crime investigation (per year)	1
		Habitual traders identified	2
Monitoring	Demand	Price of tiger parts (US $)	2
	Samples	Forensic tiger samples collected	1
	Supply	Tiger parts sold in market (per year)	2
Outreach	Behavior	TCM hospitals refusing to prescribe tiger medicines	1
	Teaching	TCM practitioners educated	8
	Film	Educational videos distributed	1
	TV	TV shows broadcasting trafficking reduction message	1

eral grants in China and the USA were education campaigns that were accompanied by pre- and post-project attitudinal or market surveys. The surveys demonstrated significant changes in availability of tiger products from target markets or practitioners, and an increased willingness from TCM practitioners to use alternative medicines that are not derived from endangered species. The grants demonstrated that the problem could be significantly reduced over time by clearly defining target populations, accompanied by surveys to monitor the extent of the problem in those areas (Henry 2004). Several enforcement-type projects revolved around the CITES agreement, which proved to be a key piece of legislation that lead to further international cooperation between law enforcement and customs officials.

Lessons learned – STF grants for tiger trafficking appear to have made an excellent impact in the areas where they have been carried out, but it is clear that our understanding of the tiger trade across Asia remains very limited, and that demand and illegal smuggling of tiger parts remain high and continue to pose a significant threat to wild tiger populations. A more systematic, coordinated approach to the issue is required.

Zoo Breeding

Save The Tiger Fund has moved away from zoo breeding programs and is now focused exclusively on wild tiger conservation issues; as a result this activity is not identified in the 2005 strategic plan.

Indicators and outcomes – Initially, Save The Tiger Fund allocated significant resources to secure breeding populations of Sumatran, Amur, South China, and Malayan tiger subspecies in zoos around the world by supporting AZA-approved breeding facilities and various tiger studbooks. There were three indicators used to measure success: the number of zoo-bred animals, facilities constructed, and zoos participating in the relevant species survival plan.

Best practices and lessons learned – The zoo community has made great strides to prevent tigers from going extinct and they have secured well-managed genetically diverse zoo populations for the Sumatran, Amur, and Malayan tiger subspecies. STF has subsequently shifted its focus to mitigate the threats faced by highly threatened wild tiger populations, but continues to

work closely with zoos that have in-situ tiger conservation programs.

Human-tiger conflict

Human-tiger conflict is a significant source of mortality for tigers and thus human-tiger conflict-mitigation activities tackle the first threat identified in the STF strategic plan: *People continue to kill tigers*.

Releasing a tiger rescued by the human tiger conflict team in the Russian Far East (*Photo credit: J. Goodrich – WCS)*

Indicators and outcomes – Human-tiger conflict reduction projects included provision of human-tiger conflict response units, monitoring human-tiger conflict, conducting outreach and compensation schemes in tiger landscapes, and translocation of problem tigers. The human-tiger conflict response teams have played a significant role in some landscapes by reducing the number of tigers killed in retaliation for depredation, and this has been identified as a major source of tiger mortality in several landscapes. The most popular indicators for these types of projects were number of tiger conflict episodes reported and resolved, number of tigers killed in human-tiger conflict episodes, and number of problem tigers translocated (Table 11).

Best practices – The approaches to human-tiger conflict mitigation vary widely depending on the landscape. The Russian Far East has employed a model that uses a dedicated human-tiger conflict response team to scare tigers away from human dwellings, relocate problem tigers if necessary, educate locals about how to avoid conflict, rescue injured tigers, and investigate causes of tiger deaths. In the Russian Far East, we have seen about 60 human-tiger conflicts reported each year, but the number of tigers killed as a result of human-tiger conflict appears to have declined. The Russian Far East example should be examined in detail to look for best practice models. Factors contributing to success are that the program 1)operates at a landscape level, 2) is well known to the public, and 3) can demonstrate real reductions in mortality from human-tiger conflict. There are also promising approaches that have been independently developed elsewhere. In the Terai Arc Landscape, human-tiger conflict responses have focused on compensating individuals for livestock killed by tigers and thus reduce the economic burdens resulting from coexisting with tigers. In Sumatra, human-tiger conflict seems to be heavily outweighed by human-elephant conflict, but anecdotal evidence from Kerinci Seblat suggests that human-tiger conflict is a more important source of tiger mortality than poaching. Conflict-related studies in Sumatra focused on research and on counseling individuals affected by human-tiger conflict and by relocating problem tigers.

Lessons learned – Given the diversity of approaches and potential outcomes, best practices are difficult to ascertain. There is clearly a need for better communication between the different groups working on human-tiger conflict issues so that the experts themselves can share lessons learned and come up with a set of best practices that would be applicable in each landscape.

Table 11: Indicators used to report success of efforts to reduce human-tiger conflict.

Method category	Method sub-category	Indicator	No reports
Capacity	Dissemination	Conference attendance	1
	Manpower	Human-tiger conflict response teams established	1
	Training	Depredation officers trained	1
Monitoring	Conflict	Tigers killed in conflict episodes (per year)	7
		People attacked by tigers (per year)	3
		Livestock killed by tigers (per year)	4
		Conflict cases analyzed	1
		People killed by tigers (per year)	3
Outreach	Giveaways	Human-tiger conflict education booklets distributed	1
Prevent killing	Prevent retaliation	Value of compensation paid to tiger conflict victims ($)	2
		Number of people applying for tiger conflict compensation (per year)	2
		Hectares of reserve de-populated through re-settlement	1
		Conflict tiger episodes resolved/investigated	5
		Conflict tiger episodes reported	7
		Km. trenches constructed (elephants)	1
	Rescue	Tigers rescued (per year)	3
Reduce human-tiger contact	Translocation	Conflict tigers translocated (per year)	5

LANDSCAPE-LEVEL OUTCOMES

General landscape-level patterns

At a landscape level, we tested the hypothesis that there was no difference in the average performance of projects from place to place using a 1-way ANOVA. The average performance in at least one landscape was significantly different ($p < 0.0001$, 233df, $F = 3.79$). An overview of the portfolio revealed that the grantees working in the Russian Far East performed exceptionally well, followed by those working in the Terai Arc Landscape. Next were international grants that potentially affect multiple landscapes (Fig. 4). When examining Fig. 4 it must be noted that different landscapes have different socio-economic and political conditions, so grantees have varying capacity to perform conservation work. They also have received very different levels of conservation investment from Save The Tiger Fund and other donors (Fig. 5)

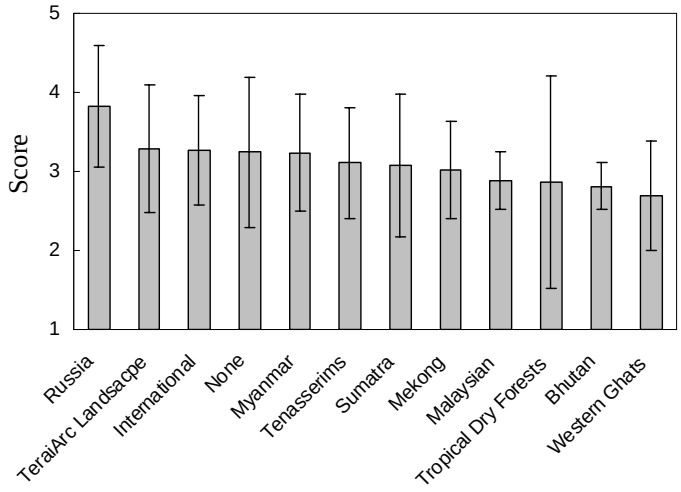

Fig 4: Average performance (+/- SD) of grants over the first decade of Save The Tiger Fund investments, broken down by landscape. A 1-way ANOVA test for differences was highly significant.

The new Tiger Conservation Landscape Analysis (Dinerstein et al. 2006) defined global priorities for tiger conservation based on the probability of long-term persistence of tiger populations in particular landscapes. When STF spending was broken down by these landscapes, most of STF's funds have been invested in level 1 TCL's in Russia, the Terai Arc Landscape, and Sumatra (Fig. 5). In each of these landscapes, tiger populations have been assigned a status derived from the World Conservation Union (IUCN) Red List of Threatened Species regional assessment protocol (IUCN 2001):

- Critical (CR) – faces an extremely high risk of extinction in the wild.
- Endangered (E) – faces a very high risk of extinction in the wild.
- Vulnerable (VU) – faces a high risk of extinction in the wild.

Russian Far East including adjacent habitat in northern China (TCL 2)

Investment - $2,753,516, representing about 21% of all STF investments.

Tiger numbers and status – **Vulnerable** VU, D1. *"Interestingly, the Amur tiger population, using these criteria, would be listed only as vulnerable. The primary reason for this is because we have not detected a decrease in numbers over the past 10 years, and population size (mature adults) appears to be greater than 250 individuals. According to these criteria, we're in pretty good shape!"* (Dale Miquelle, pers comm.)

About 450 tigers in total remain in the Russian Far East with a distribution covering 156,000 sq km (Handwerk 2005). According to the most recent 2005 census, tiger numbers in the Russian Far East are stable and the Russian Far East is the only tiger landscape for which we have scientifically credible, landscape-wide tiger population estimates over a prolonged time period. A stable tiger population in Russia represents a significant conservation outcome achieved through the cooperation of multiple government agencies, NGOs, and philanthropic investors. Nonetheless, the tiger remains vulnerable and conservation biologists believe that the forest habitats of the Rus-

RESULTS

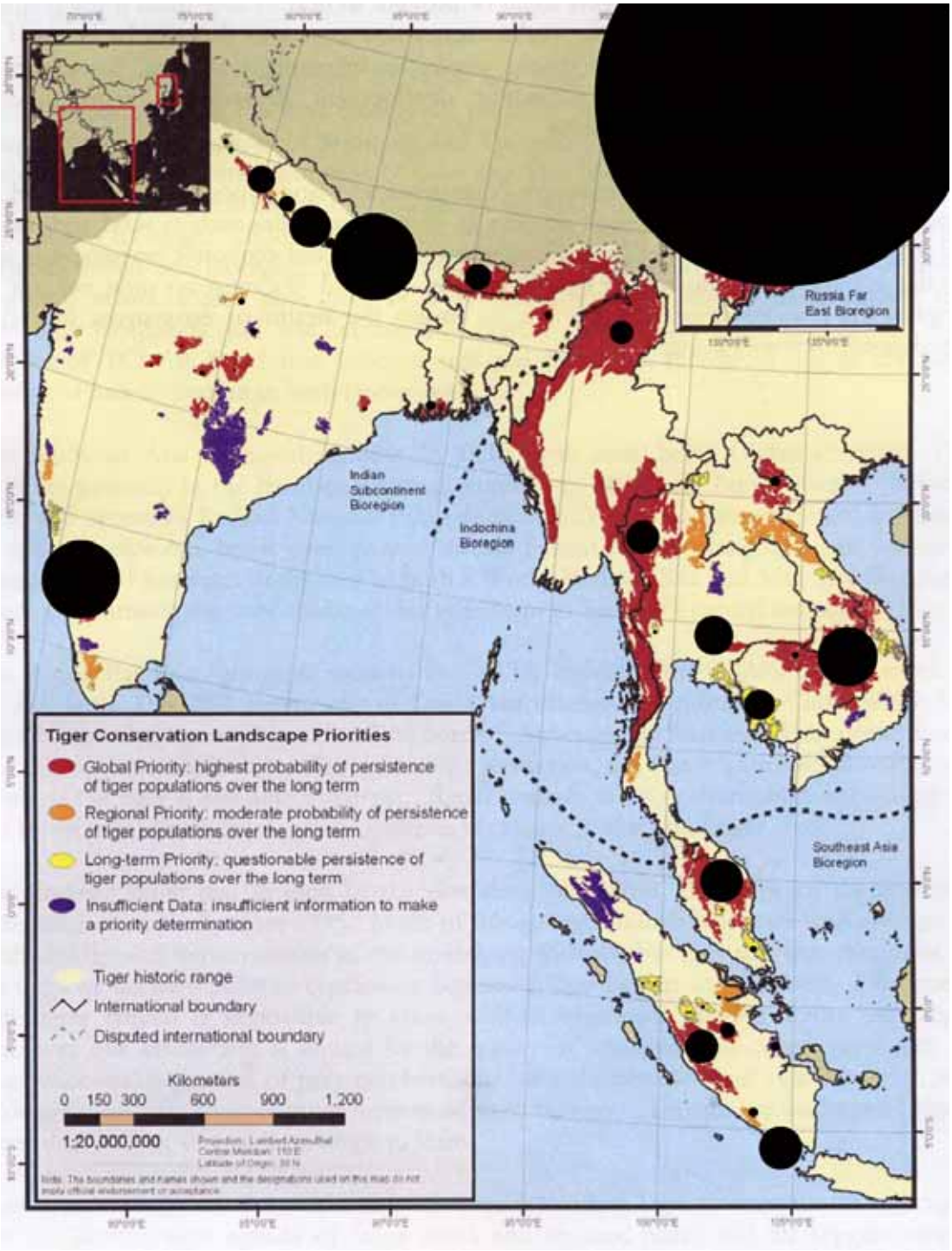

Fig 5: Save The Tiger Fund spending overlaid on the new Tiger Conservation Landscape Analysis. Black dot radius is directly proportional to the level of funds invested by Save The Tiger Fund.

sian Far East could support a population of about 700 tigers if the prey base were to increase (Darman & Williams 2002).

Landscape Vision – Russian conservationists have clearly articulated landscape-level vision and a tiger action plan (Abramov et al. 1999; Miquelle et al. 1999; Darman & Williams 2002). Initial work by STF grantees lead to the development of a grand landscape-level vision of reserves, buffer zones, corridors, and hunting-lease systems that is being implemented by several coordination groups (WCS 2006).

Over hunting of tiger prey for venison in the Russian Far East means that it is unlikely that tiger numbers will be able to grow significantly (*Photo Credit: Phoenix Fund*)

Conditions and threats - Deer and pig population numbers are low, probably because of over hunting by people. Extensive fires (Loboda 2004; Miquelle et al. 2004), new road networks (Kerley et al. 2002) and continued forestry (Darman & Williams 2002) are changing this tiger landscape. A scientific monitoring program indicates stable tiger population trends but low numbers of cubs are being produced (Kerley et al. 2003). Tigers eat dogs when they can, so canine distemper outbreaks are a real and pervasive threat (see grant no. 2003-0087-016). Tigers are valued but are widely seen as competitors for game that might provide meat for the tables of local hunters. Poaching of tigers continues.

Outcomes and conservation innovations supported by STF; STF grantees:

- Established, trained, and supported several anti-poaching operations including the government-endorsed "Inspection Tiger" patrolling units that now have 32 full-time anti-poaching staff resulting in a measurable decline in poaching incidents.
- Built and equipped anti-poaching and research facilities and other infrastructure.
- Rescued several tigers from poacher's snares.
- Established full-time professional human-tiger conflict response teams to resolve conflict episodes and reduce conflict-related tiger mortality.
- Conducted outstanding ecological research studies that have enhanced our understanding of basic tiger ecology, reproduction and dispersal, predator-prey relationships, the impact of roads and forestry, tiger landscape requirements, and human-tiger conflict.
- Developed a landscape-level plan, *Protected Areas Network for Sikhote-Alin Mountain Forest Ecosystems Conservation in Kabarovsky Krai, Russia*, which was funded in 2001 at $750,000 by the Global Environment Facility http://www.gefonline.org/projectDetails.cfm?projID=1303.
- Acquired the Southern Valley hunting lease that later served as a model for 14 others – especially important as 90% of potential tiger habitat in Russia is on land that is managed under hunting-lease systems.
- Developed innovative monitoring methods in the region, including snow-tracking surveys and scent-dogs.
- Continued region-wide tiger monitoring census into its tenth year. This is the only tiger subspecies for which we have reliable population numbers and trends.
- Hosted an international conference on the conservation of the Amur tiger in Russia in 2003, assessing the progress over the past decade and developing a strategy for

the future.

- Established an outstanding education and outreach program that includes eco-camps, high-quality television documentaries (including a National Geographic Special), school curricula, films, and Tiger Day in Vladivostock, which is now an annual city holiday with more than 3000 festival participants.
- Extended the Sikhote-Alin Reserve by 67,000 hectares.
- Provided core funding that started the Phoenix Fund to increase civil-society support for tigers. Its director, Sergei Beruznuk, won a Whitley Award for Nature Conservation for work on tiger conservation.
- Built capacity within the Primorsky Customs Service to enforce the ban on international trade in tiger products.
- Helped form a Russian federal-level committee to examine the threats and conservation actions needed to ensure the survival of tigers in the wild.
- Encouraged cooperation between Russia and China. China has reserved lands adjacent to the Russian border that will add significantly to the amount of habitat available when, and if, prey populations in those forests recover.

Terai Arc Himalayan foothill forest and tall-grassland in India and Nepal (TCL 40-46)

Investment - $1,403,882

Tiger numbers and status – **Vulnerable** VU, D1. Tiger distribution is well known throughout the landscape (Johnsingh et al. 2004; Shrestha 2004), and population estimates are excellent for some places, but lack of data-sharing and lack of consistent monitoring methodology have hindered adequate landscape-level tiger population estimates. Corbett Tiger Reserve in India is thought to have about 70 tigers (see grant no. 2002-0301-018) and Rajaji National park has 10 to15 (see grant no. 1999-268-076). In Nepal, 16 to 18 breeding tigers have been recorded in Sukalphanta National Park (see grant no. 1998-0093-0055) and18 tigers in the Nepal - Basanta and Katarniaghat Forest Corridors (see grant no. 2002-0301-026).

Landscape Vision – The Terai Arc Landscape or TAL is a new big conservation idea designed to benefit tigers and people (Seidensticker & Lumpkin 2006) and has been embraced as policy by the Government of Nepal (Anon 2004). Talks continue to encourage India to do the same and India-Nepal trans-boundary cooperation has been encouraged by STF.

The Terai Arc Landscape has been fragmented by huge pressure for agricultural lands, like these. However, it is being stitched back together though a system of habitat corridors managed by local communities and reserves (*Photo Credit: AJT Johnsingh*)

Conditions and threats – Millions of cattle live in Terai Arc Landscape forests and threaten prey populations there. Poaching is a major problem in some sections: six tigers were reportedly poached in 2002 and eight in 2003 (Baral & Heinen 2006). Although tiger-human conflict continues, tigers are valued and there is considerable tolerance even in conflict situations. However, the political situation in Nepal is problematic and there may be no resolution that is good for conservation (Baral & Heinen 2006). Save The Tiger Fund's investments in bottom-up community-based conservation efforts through financially independent NGOs has proven to be a more resilient conservation strategy in this political turmoil than top-down government-directed "fortress and fines" conservation models (Baral & Heinen 2006). On the Indian side, poor land-use zonation

and habitat fragmentation have been identified as major threats (Johnsingh et al. 2004).

Outcomes and conservation innovation supported by STF

- Supported community-based anti-poaching operations and provided infrastructure and morale-building incentives for forest department staff.
- Established village watcher program to monitor human-tiger conflict cases.
- Supported several tiger, prey, and habitat monitoring programs throughout the landscape.
- Promoted various sustainable development activities to improve well-being of villagers, ranging from alternative-energy schemes to ecotourism and sustainable agriculture schemes.
- Planted over half a million trees to restore about 5,000 hectares of buffer-zone forests and wildlife corridors in Nepal.
- Trained many local conservationists and groomed future conservation leaders.
- Supported work by the King Mahendra Trust for Nature Conservation leading to a $750,000 Global Environment Facility grant "*Landscape-scale Conservation of Endangered Tiger and Rhinoceros Populations in and Around Chitwan National Park*" http://www.gefonline.org/projectDetails.cfm?projID=906 .

Remaining Sumatran Forest (TCL 3- 14)

Investment - $1,374,881

Tiger numbers and status – **Critically Endangered** CR C1 + 2a(i). Despite funding several Sumatra-wide tiger monitoring efforts, an island-wide census of tigers does not exist and information is lacking for the Gunung Leuser Landscape, a large forest block to the north of the island (Dinerstein et al. 2006). Way Kambas National Park in the extreme south is a small isolated forest patch (130,000 hectares) and is thought to have 19 to 21 tigers (see grant no. 1996-0134-017), while Bukit Barisan (356,800 hectares) in the southwest part of the island has about 50 tigers, at 1.6 tigers/100km^2 (see grant no. 2000-0182-019). Tiger numbers have declined sharply in the southern part of the park, but seem to be stable in the north (see grant no.2000-0182-019; O'Brien et al. 2003).

Landscape Vision – There is an emerging broad landscape-level tiger conservation consensus in Sumatra that the islands' tigers are critically endangered, but as yet no island-wide landscape-level vision has evolved to address this challenge successfully. Individual projects in northern, central, and southern Sumatra are beginning to work successfully at landscape levels. Activities over the last 10 years have focused on securing existing protected areas, which are under major pressure from poachers, agricultural encroachment, and illegal logging. However, recent pioneering research on tigers in oil palm plantations (see grant no. 2004-0103-014) and collaborative conservation work involving logging companies bordering protected areas (see grant no. 2004-0103-015) may in the longer term lead to the realization of an island-wide, contiguous tiger landscape consisting of multiple protected areas connected to each other by tiger-friendly habitat corridors and protected by multiple-use buffer zones (Seidensticker 1986; Tilson et al. 2000).

A poacher with a fresh Sumatran tiger skin *(Photo credit: FFI)*

Conditions and threats – Tiger numbers continue to decline due to poaching for pride and profit (Shepherd & Magnus 2004). Tigers that come in conflict with people are killed also. The last remnants of lowland forest are being eliminated to establish oil palm plantations and for shifting agriculture by recent settlers from other areas of Sumatra and Indonesia. Ongoing road development makes many formerly inaccessible mountain areas accessible to illegal logging even on the steepest slopes, and many mountainous areas are being converted into plantations for coffee and other products for international markets. Tigers are legally protected but are not highly valued.

Outcomes and conservation innovation supported by STF:

- Improved anti-poaching activities and law enforcement using specialized Tiger protection units of five to ten trained enforcement professionals.
- Identified human-tiger conflict as the most significant source of human-induced tiger mortality. Human-tiger conflict research and response schemes were established.
- Investigated the tiger trade industry and identified the involvement of some high-ranking army officials and politicians. This makes law enforcement problematic, but grantees' relationship with the local police force in West Sumatra is improving.
- Monitored tiger and prey to create good population baseline information in some reserves, and this has been used to prioritize areas for anti-poaching patrols.
- Implemented local community-outreach education programs, constructed a school, and developed innovative outreach approaches such as enlisting the support of local shamans who invoke traditional value systems to encourage people to protect wild tigers.
- Built conservation capacity and trained local conservation leaders.
- Collected tiger monitoring data for Bukit Barisan, Kerinci, and Way Kambas.

Western Ghats of India (TCLs 63-72)

Investment - $498,909

Tiger numbers and status – **Vulnerable,** D1. For the Western Ghats of India, we have a fairly good estimate of tiger and prey population sizes in several national parks in Karnataka state, where tigers are found in very high densities, 15.2/100km^2 in Nagrahole, 3.4/100km^2 in Bhadra, and 12.0/100km^2 in Bandipur (see grant no. 1999-0268-092; Karanth & Nichols 2000; Karanth et al. (in Press); Karanth & Stith 1999).

Landscape Vision – Efforts to date have largely focused on alleviating threats to tigers within existing protected areas, which continues to be a critical focus because villages remain in most reserves. Tiger monitoring efforts need to be scaled-up to incorporate the entire Western Ghats Landscape. However, there is an essential need to establish connectivity between core areas and to develop a multi-stakeholder landscape-level vision and some pilot corridor and buffer-zone projects in the coming years.

Team of tiger researchers in the Western Ghats Landscape lead by Ullas Karanth (far left). (*Photo credit: Centre for Wildlife Studies*)

Conditions and threats – Tiger numbers are stable in those protected areas where they have been scientifically monitored. Poaching remains a problem, but some good progress has been made to alleviate threats posed by people living inside protected areas through voluntary resettlement programs that move people to other sites and support their health and educational needs.

Outcomes and conservation innovation supported by STF

- Improved the anti-poaching capacity of the Karnataka Forest Department by providing it with vehicles and equipment. This was critical when the wildlife wing of the Forest Department was separated from the rest of the Department and was incapacitated due to a shortage of equipment.
- Assisted a government-run voluntary resettlement program to improve the livelihoods of people who volunteer to move out of parks. This resulted in the resettlement of many families and decolonization of over 500 hectares in protected areas.
- Successfully lobbied the Indian Supreme Court to schedule the closure of long-time mining activity in some reserves.
- Coordinated extensive education programs targeting school children.
- Carried out scientifically sound monitoring of tigers and their prey over several years in some parks.
- Trained local conservation leaders who are now working to further conservation efforts in the region.
- Supported civil society to engage in conservation activities and sustainable development programs.

Lower Mekong Forest in Cambodia and Vietnam (TCL 25-32).

Investment – $798,480

Tiger numbers and status – **Critically Endangered** CR, A2. Several populations of tigers in this landscape have recently gone extinct. Recent surveys in Botum Sakor, Mondulkiri and Koh Kang national parks did not record any tiger signs in 2003/2004 (see grant nos. 2003-0087-008 & 2003-0087-009).

Landscape Vision – Given the large tracts of intact forest in this region, landscape level plans would be useful to protect the future value of this habitat for tigers, and an initial vision has been articulated in the appendix of *Setting priorities for the conservation and recovery of wild tigers: 2005-2015: The Technical Assessment* (Sandreson et al. 2006). However, several forests are essentially empty of tigers and tigers occur at very low densities wherever they remain. Strong actions and commitment from the highest levels of government are needed to curb poaching of tigers and their prey. A systematic, landscape-wide, anti-poaching effort that is endorsed by the government, military, and police is needed. This must be accompanied by tiger distribution surveys to track recovery.

Conditions and threats – Large tracks of relatively intact and stable forest with tremendous tiger and biodiversity conservation potential remain but poaching of tigers is rife. Tigers are legally protected throughout this region but are valued as commodities. Anti-poaching activities by STF grantees have had limited success where poaching operations involve military officials. Patchy tiger survey data point to a steep decline in tiger populations in this region over the last 10 years.

Outcomes and conservation innovation supported by STF

- Increased anti-poaching capacity across the region, resulting in a measurable decrease in poaching activities in some areas.
- Established community monitoring and enforcement volunteer networks.
- Improved park management systems, land-use zonation, and research capacity, and groomed local conservation leaders across the region.
- Improved understanding of tiger distribution, carrying capacity, and hunting pressures and other threats.
- Educated local communities and hunters living around some protected areas and assisted them to develop sustainable agricultural practices.
- Produced a first draft of a National Tiger Action plan for Cambodia, but this was

never finished or implemented.

Remaining Malaysian Forest (TCLs 15-17)

Investment – $503,548

Tiger numbers and status – **Vulnerable** VU, D1. Tiger numbers are apparently stable in the Taman Nagara National Park, which has 91 adults and cubs corresponding to a density of 1.1-1.98 adults per 100km^2 (see grant no. 2001-0152-024) but tigers are in conflict with people in non-protected areas where they are threatened by habitat destruction and human activity associated with logging operations (Kawanishi et al. 2003).

Playful tiger caught in camera trap, Taman Negara *(Photo credit: Kae Kawanishi)*

Landscape Vision – Tigers are protected in Malaysia and short-term threats appear to be well managed, but there is no current, clearly stated national or landscape-level action plan. An action plan could be a valuable asset to the Malaysian government to help ensure the long-term health of Malaysia's tigers, which were recently declared a new subspecies (Luo et al. 2004).

Conditions and threats – Human threats to tigers are a continual concern inside Malaysia's national parks (M. Khan, pers. com.) and their status outside of protected areas is uncertain and in need of further attention.

Outcomes and conservation innovation supported by STF

- Increased anti-poaching capacity.
- Compiled comprehensive database and maps of the distribution of Malaysian tigers (Kawanishi et al. 2003); 10,000km2 of additional tiger habitat was found in Malaysia, compared to 1997 estimates (Sanderson et al. 2006).
- Conducted several national tiger education campaigns, including a new network of community leaders, government officials and NGOs known as MY CAT.
- Trained local students and conservation staff, and groomed future tiger conservation leaders, including a tiger advisor to the Malaysian government.

Greater Tenasserim Forest in Thailand and Myanmar (TCL 18-20)

Investment – $348,753

Tiger numbers and status – **Endangered** EN, D. A tiger survey throughout Thailand estimated that about 190 tigers remain with strongholds mainly in the Tenasserim Forest, including the Western Forest Complex (89) and further south in Kaeng Krachang (40). Other tiger strongholds were Hlabalaba (20) and Phu Kieho (19) (see grant no.1999-0268-083). It is uncertain how many tigers are on the Myanmar side of the Terasserim complex.

Landscape vision – The Thai-Myanmar border represents a challenging conservation frontier from a political perspective, but is a significant contiguous stretch of forest with enormous potential for tiger conservation. Work needs to be done to strengthen and coordinate conservation actions on both sides of the border and to develop a landscape-level plan, particularly outside of protected areas, to ensure that the rest not become fragmented by habitat destruction.

Conditions and threats – Poaching of tigers is unchecked in many areas and strengthening of anti-poaching work is essential throughout the landscape. Even though tigers are legally pro-

tected throughout this region, there is a high demand and ready markets for tiger products in nearby China.

Outcomes and conservation innovation supported by STF

- Strengthened country-wide reserve management capacity and trans-boundary anti-poaching activities along the Thai-Myanmar border.
- Conducted baseline tiger and prey surveys of several protected areas, and compiled habitat maps for the Tenasserim range.
- Supported work on Thailand's Tiger Action Plan.

Eastern Himalayan forests and tall-grasslands anchored by Bhutan (part of TCL 37)

Investment – $246,818

Tiger numbers and status – **Vulnerable** VU, D1. Grantees final reports for this landscape did not include any tiger population estimates.

Landscape vision – Bhutan has a model landscape-level conservation program and strong conservation leadership. However, Bhutan must remain vigilant and identify emerging threats to tigers. There is potential to improve trans-boundary management of parks shared with India.

Conditions and threats – Tigers are valued. But these tigers are vulnerable, and without constant vigilance, the removal of even a few could rapidly change their status from vulnerable, to endangered, to critical. Would we be able to detect this? Not at this juncture. Monitoring is essential. All lowland forests are critically endangered and tigers have been reduced or removed from most. Large tracks of endangered and vulnerable hill forests remain where tigers live at low density.

Outcomes and conservation innovation supported by STF

- Developed a Tiger Action Plan for Bhutan.
- Facilitated India-Bhutan trans-boundary cooperation.
- Completed a detailed human-tiger conflict study that lead to the establishment of compensation schemes and the livestock depredation action plan.
- Improved efficiency, capacity, and rigor of anti-poaching operations.
- Conducted tiger conservation education activities at national level.

Myanmar's Hukuang Valley (Myanmar part of TCL 37)

Investment – $248,265

Tiger numbers and status – **Critically Endangered** CR, C 2a (ii). Following a recent survey, WCS estimated that there were about 150 tigers in Myanmar (grant no. 2000-0182-020), occurring in less than one quarter of the potential areas. The greatest stronghold for tiger conservation is the Hukuang Valley with 32 to 60 tigers (grant no. 2003-0087-012; Lynam 2003). This TCL has three distinct populations of tigers: one is west of the Chindwin River to the India border (Chin Hills); another is in the southwest that includes areas adjacent to the Bangladesh border; the third is in coastal areas on the Bay of Bengal Upper Chindwin and Northern Forest Complex, where we now have tiger density estimates (A. Lynam pers. comm.).

The team that conducted the tiger survey leading to Myanmar's Tiger Action Plan. *(Photo credit; WCS).*

Landscape vision – The National Tiger Action

Plan for Myanmar identifies priorities for tiger conservation throughout Myanmar and lays out an effective vision for tiger conservation in the remaining tiger conservation areas, but it is unclear how effectively this is being implemented.

Conditions and threats – Extensive forest tracts remain in Myanmar but tigers have been surgically removed by poachers from nearly all areas except the Hukuang Valley in the north. An ambitious national action plan to restore tigers is in place, and there is a strong need to build local conservation management capacity in existing parks and to facilitate effective land-use planning in order to ensure success.

Outcomes and conservation innovation supported by STF

- Conducted tiger surveys in all remaining forest areas and national parks.
- Developed a National Tiger Action Plan for Myanmar in cooperation with the Myanmar government.
- Conducted community outreach activities in the buffer zone of Alaungdaw Kathapa National Park.
- Gave the 2,000,000-hectare Hukuang Valley Tiger Reserve (the largest in the world) protected status.

Tropical dry and moist forests in the Central Indian Highlands (TCL 55-60)

Investment – $159,939

Tiger numbers and status – **Endangered** EN, C2 a (i). Tiger numbers in this region appear to have declined, and there are large discrepancies between official and actual tiger numbers in some areas. In Panna Wildlife Reserve, nine breeding tigers out of a population of 11 breeding tigers were lost between 1999 and 2005 (see grant no. 2002-0301-004).

Landscape vision – There is no landscape-level vision for this area, which has some excellent habitats that are becoming increasingly fragmented and contain genetically unviable tiger populations that are highly prone to extinction. A large block of potential tiger habitat was identified in the new TCL document, but Save The Tiger Fund has very little reliable information on the tigers there and political unrest poses a significant challenge to hands-on conservation.

Tiger with cub in Panna Tiger Reserve, India (*Photo credit: J Van Gruisen*)

Conditions and threats – About half of the 300,000 sq km of potential tiger habitat in the Indian subcontinent is in the tropical dry forests, but this cover type is full of people and cattle, and as a result, tigers are in conflict with people. Tigers are probably in decline through much of this area but research in this region has demonstrated that tiger and prey populations can recover quickly with effective protection and management.

Outcomes and conservation innovation supported by STF

- Monitored tiger and prey in some reserves.
- Supported local community environmental education activities.

Sundarbans mangrove forest in India and Bangladesh (TCL 39)

Investment – $71,000

Tiger numbers and status – **Vulnerable** VU, D1**.** A recent pugmark survey carried out by an STF grantee, The Ministry of Environment and For-

ests in Bangladesh, discovered a population of 440 tigers (MoEF 2004).

Tiger conservation team in Bangladesh anesthetize and radio collar a Bengal Tiger (*Photo credit: A. Barlow*)

Landscape vision – At 10,000 sq km, the Sundarbans is one of the world's largest intact mangrove forests and has been effectively managed for more than 125 years as a conservation and multiple-use landscape, part of which has been declared a UN World Heritage Site (Seidensticker & Hai 1983).

Conditions and threats –Tigers have lived successfully beside forestry and fishing enterprises, but tigers continually and routinely kill people. We don't know where the critical habitats are for tigresses to rear cubs. The mangrove forests are under threat, with their use being refocused from forestry and fishing to shrimp culture and other resource development. From a conservation perspective, there is potential to improve India-Bangladesh cooperation for conservation.

Outcomes and conservation innovation supported by STF

- Funded two projects that were still active at the end of 2005 when this evaluation was conducted. One is primarily a census and an ecological study, and the other is working on human-tiger conflict reduction.

International projects, projects on multiple tiger landscapes, and work in other areas

Investment – $4,269,944
Tiger numbers and status – A reliable global estimate of wild or captive tiger numbers is not available at this time. Well-managed zoo breeding programs mean that extinction is unlikely for any remaining tiger subspecies, but they are disappearing from the wild and facing ecological extinction. Overall, the tiger is listed as endangered on the IUCN Red List (CSG 2004).

Landscape vision – The new TCL document *Setting priorities for conservation and recovery of wild tigers: 2005-2015* (Dinerstein et al. 2006) clearly outlines a vision to mobilize international efforts to focus on the key in situ tiger conservation issues. This needs to be accompanied by effective work that reduces demand for and trafficking of wild tiger parts and increases international awareness regarding the status of tigers and cooperation to reduce threats to their survival.

Conditions and threats – Poaching of tigers for their skins and bones, reduction of tiger prey populations, habitat loss, tiger mortality due to human-tiger conflict, and genetic deterioration resulting from population fragmentation have been identified as the principal threats to tiger populations across their range.

Outcomes and conservation innovation supported by STF:

- Published many significant books, papers and reports, and websites that have influenced tiger conservationists, policy makers, and public audiences around the world (Appendix B).
- Conducted international education campaigns about the threats to wild tigers.
- Hosted several tiger conferences that brought together world tiger experts from 13 different tiger range countries to share the lessons learned from decades of collective tiger conservation experience.
- Facilitated an international workshop to teach customs officials from six countries

about tiger-trafficking issues.

- Developed the South China tiger, Indochinese tiger, Sumatran tiger, and Amur tiger studbook analyses and masterplans for zoo breeding programs.
- Constructed a high-quality breeding facility for tigers at the Dallas Zoo.
- Designed a tiger exhibit that toured nine U. S. zoos over three years to educate the general public about the problems faced by tigers.
- Established the model school program in China that builds environmental awareness into the teaching curriculum.
- Educated Traditional Chinese Medicine practitioners and consumers about tiger-bone alternatives in China and the USA, leading to changed consumption patterns in some places.
- Provided international scholarships and training to build capacity and to groom future tiger conservation leaders from tiger range countries.
- Provided expert guidance to strengthen the Rhino and Tiger Conservation Act (USA).
- Improved law enforcement operations and capacity in small tiger reserves.
- Improved our understanding of the density and ecological relationships between tigers and their prey as well as effects of human-tiger conflict in several tiger reserve areas.
- Improved the well being of villagers living around various protected areas by providing significant health care, schools, and/or other education programs such as eco-clubs.
- Reduced the demand for wood harvested in Ranthambhore National Park by providing alternative energy such as biogas plants to villages around the park.
- Shut down illegal sawmills in some protected areas in Thailand.

DISCUSSION AND RECOMMENDATIONS

METHOD

Sources of error

Grantees have a vested interest in reporting positive results in order to maintain good relationships with the donor and this is a likely source of positive bias in this analysis (Ferraro & Pattanayak 2006). One way to address this problem is to follow up on the grantee's self-assessments with field visits by STF staff to ground-truth project outputs. This has been done on an informal basis over the last 10 years by STF staff and some council members, and their notes from the field indicate that the error can go both ways: some grantees overstate their accomplishments, but others have poor capacity for reporting the results of their projects and thus scored poorly in this evaluation. The fact that some local NGOs have poor capacity to effectively communicate the results of their projects, even though site visits show that they have made good progress on the ground, can at least partially explain the overall weak performance of the Western Ghats portfolio (M.S. pers obs, Fig. 4).

In the future, a sub-sample of grants should be evaluated using a standardized field evaluation method and reporting system that can be incorporated into individual project files. This method has already been developed and piloted within the National Fish and Wildlife Foundation and should be adopted by STF.

Weaknesses

The method employed here has some inherent weaknesses that should be considered when interpreting results. First, the method only answers the question "Did the grantees do what they said they would do?" This does not mean that all activities will result in a net conservation benefit. However, the fact that proposals are selected by a panel of eminent conservation experts (The STF Council) through a competitive application process minimizes the risk of funding projects that will not result in positive conservation benefits.

The method allows consideration of project outputs such as the number of conservation leaders trained, but cannot examine long-term outcomes such as whether the conservation leader developed a conservation career that resulted in a long-term contribution to his or her field. A follow-up survey of grantees to determine long-term outcomes of STF investments would strengthen this evaluation.

Strengths

Given the diversity of activities and grants, this classification system, which weights the investments by the activity type, is a very useful tool. It is a significant advance over previous grant classification systems in which a grant that was half conflict mitigation and half anti-poaching was arbitrarily classified as one or the other. The activity-based performance scoring system is the only way in which a grant portfolio with such a diverse range of activities and outputs can effectively be evaluated.

A comparison between outputs in the final report and the actual proposal is something that the National Fish and Wildlife Foundation's staff are required to do as part of the project closure process, but the current system is both unstandardized and unquantified. The method used in this evaluation is simple and straightforward and should be continued as a standard part of the closure process for all future STF grants and may be a useful approach to incorporate into other National Fish and Wildlife Foundation programs.

INVESTMENT PORTFOLIO

Project selection

Investments by landscape – Because tigers require relatively large home ranges, small areas that contain fewer than about 50 tigers, even if highly protected, are not sufficient on their own to ensure the long-term viability of their tiger population. Small, fragmented populations are susceptible to inbreeding depression and are more vulnerable to extinction from stochastic events such as disease, poaching, or natural disasters (Seidensticker 1986; Linkie et al. 2006). Taking this into consideration and building on lessons learned from the loss of the Javan and Bali tigers (Seidensticker 1986; Seidensticker 1987), a landscape formula informally referred to as "The five Cs" has been used to communicate best conservation practices when planning a landscape-level vision for the conservation of tigers and other carnivores:

DISCUSSION AND RECOMMENDATIONS

> *Top **C**arnivores need **C**ore protected areas that are connected by **C**orridors of suitable habitat and their needs must be **C**ommunicated locally and globally to ensure that they are valued by human **C**ommunities that share tiger landscapes.* (Lumpkin & Seidensticker 2002)

Thus, over the last 10 years, using the 1997 framework document (Dinerstein et al. 1997) to guide investments, STF has focused most of its in situ investments in larger priority landscape areas that are capable of supporting more than 100 tigers. Most of the funds were invested in regions that had well-developed landscape visions such as the Russian Far East and the Terai Arc Landscape (Fig. 5).

When looking at STF's investments the resources allocated to the Russian Far East strongly outweighed those allocated to other areas (Fig. 5). This is probably the result of two factors. First, the grantees in the Russian Far East performed exceptionally well and out-competed grantees from other landscapes through the competitive proposal application system, in spite of some language barriers (Fig. 4). Second, the Russian Far East has a well-developed, long-standing, landscape vision offering the potential donors a clear blueprint for investments while the grantees themselves have good scientific and technical capacity in a wide range of fields and have demonstrated an exceptional ability to work together with international NGOs (Miquelle et al. 1999; Darman & Williams 2002; Miquelle et al. 2005). The fact that tiger numbers have been stable in this landscape over the last 10 years reflects well on the various conservation groups and investors working in the region as well as on the Russian government.

Given the emergence of the landscape-level commitment to tiger conservation that began in 1997 with the release of the first TCU document (Dinerstein et al. 1997), it is probably no coincidence that the Terai Arc Landscape received the next highest level of investment. Save The Tiger Fund's commitment to the idea of landscape-level conservation actions that involve local communities has been realized on the ground despite political turmoil (Seidensticker & Lumpkin 2006) and reports indicate that tiger populations in this landscape are relatively stable, even though a landscape-wide census has not been conducted (Anon 2004). The fact that the Terai Arc and the Russian Far East landscapes are thought to have stable tiger populations is a clear indication of the success of landscape-level conservation work that has buy-in from conservation groups, scientists, governments, and local people. Landscape-level plans have been devised for the Russian Far East (Miquelle et al. 1999; Bogatov et al. 2000; Darman & Williams 2002), the Terai Arc Landscape (Anon 2004) and Bhutan (NCDDF 2005). In other areas, various plans have been devised or piloted (e.g., Lynam 2003; UMEF 2005) and may eventually lead to the realization of the tiger-human friendly landscape vision laid out in Save The Tiger Fund's strategic plan (STF 2005), but STF must be pro-active and provide the impetus, technical advice, and funding to achieve this vision.

Places that have received the bulk of STF investments, are accompanied by large landscape-level visions have realized landscape-level outcomes. Save The Tiger Fund does not have enough resources to achieve its mission of saving wild tigers across their range, thus a narrowed scope that ensures that the desired conservation outcomes in each landscape would be easier to evaluate in the longer term. While the historic funding of tigers across their range has helped us to achieve a better understanding of the tigers status and distribution and threats throughout a notoriously heterogeneous political landscape, future spending may be more effective if spending is focused in fewer high-priority tiger landscapes. The focused, landscapes approach outlined in the strategic plan means that some grantees who have relied on funding from STF will be negatively affected by STF's new direction, but organizations working within the selected landscapes should benefit from a more focused and consistent funding stream. Save The Tiger Fund may also benefit institutionally if it can market landscape-level success stories, landscape by

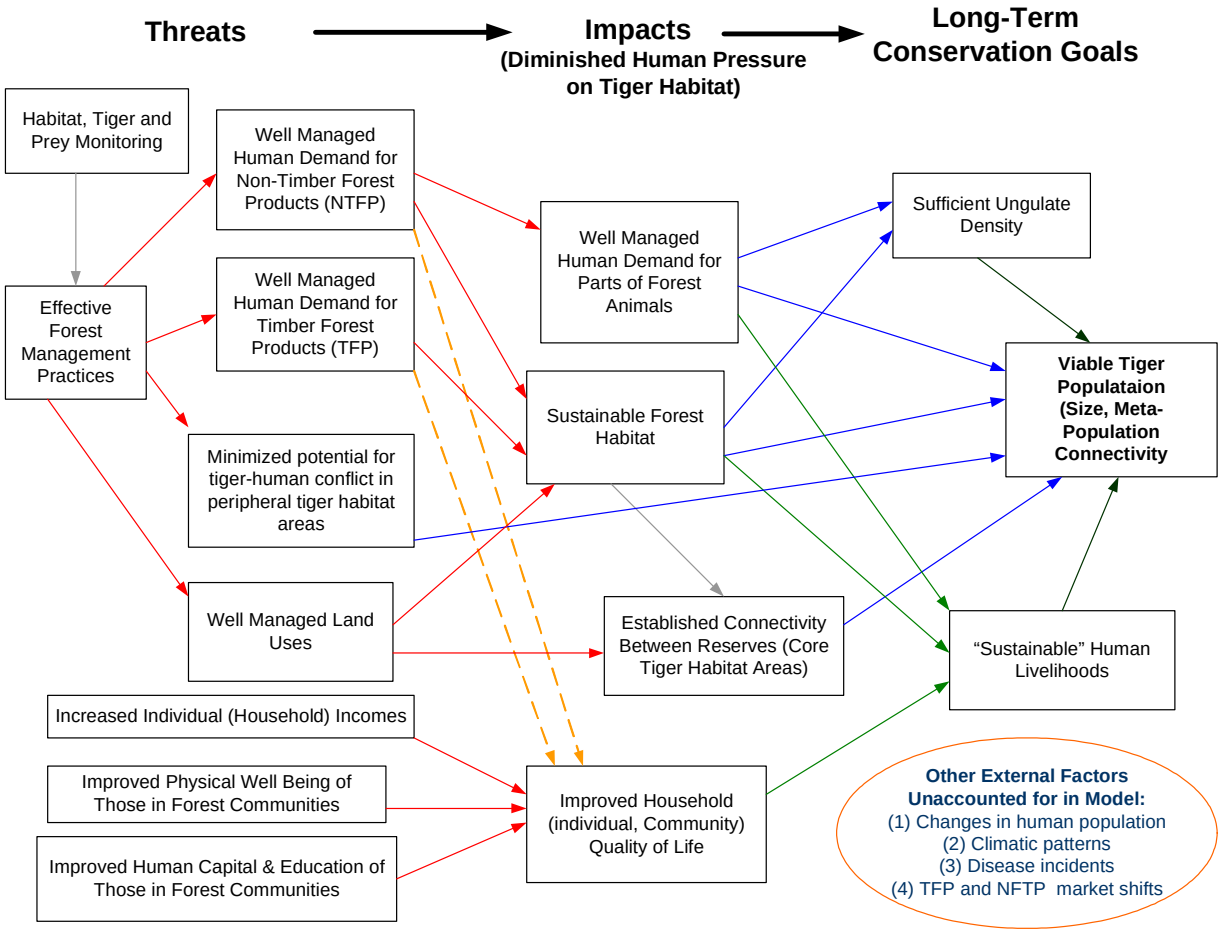

Fig. 7: Concept model to illustrate direct and indirect effects on tiger conservation in the Terai Arc Landscape.

landscape, to potential new donors.

Weighting of investments by activity type – The question must be asked: "Does the ratio of funding allocated to various activity types reflect the most effective use of funds?' This is the first time that STF investments have been broken down by activity type, creating an important opportunity to reflect on past investing habits. To date, and including the 2005 strategic plan, STF has not clearly articulated a prioritization or weighting of activity types. That we have lost up to 40% of tiger habitat in the last 10 years (Dinerstein et al. 2006 & Sanderson et al. 2006) make a compelling case that very high-priority future investments should be concentrated in activities that directly mitigate threats to wild tigers and their habitats. Examples of projects that have the most direct, measurable conservation outcomes for tigers are: 1) habitat acquisition and restoration, 2) anti-poaching, 3) trafficking reduction, 4) human-tiger conflict reduction, and 5) understanding – specifically the monitoring component that informs conservation management actions and visions for tiger landscape conservation. Activities that have the least direct conservation outcomes are education and sustainable development projects and, when resources are limited, these should be given lower priority, or should carried out in conjunction with the first five groups of activities. This recommends an investment plan that differs quite considerably from that reflected in actual spending patterns between 1995 and 2004 (Fig.1) and should be borne in mind when the STF Council reviews proposals in the future.

Direct and indirect effects – The long-term goal of Save The Tiger Fund is to ensure that viable wild tiger populations survive across their range for future generations. Given the wide variety of different STF activities funded, it is useful to consider how its portfolio fits together to ensure the continued viability of wild tigers. A concept map of different activities in the Terai Arc Landscape illustrates how sustainable development work could lead to the long-term outcome of a viable wild tiger population, even though the cause-effect links are tenuous (Fig. 7). If a grant has outputs that will positively affect tiger numbers, prey numbers, or habitat, then it has very direct conservation outcomes and is therefore a very desirable project. Other strategies may lead more indirectly to positively affecting tiger numbers, prey populations or habitat. For example, teaching income-generating skills such as sewing lessons to people living near tiger reserves might lead to poverty reduction, which may give people opportunity to use natural resources sustainably, which in turn may lead to reduced pressure on tiger habitat. Alternatively, when sustainable development activities are brought to local communities whose members are told that the benefits are being provided because they live near tigers, this may encourage them to value tigers. Improving skills also enables people to engage in alternative livelihoods and keeps the people out of protected areas. These scenarios are not implausible, but even after decades of investment, there have been no studies that demonstrate the causal links (Ferraro & Pattanayak. 2006). Thus the links have to be taken on good faith and should be ranked lower on the priority list than more direct effects that are not confounded by unproven cause-effect pathways.

Landscape-level outcomes

The two success stories that have been established as a result of this evaluation: the Russian Far East and the Terai Arc Landscape. Each place apparently has stable tiger populations. Given that Save The Tiger Fund supplied about 1/3 of the tiger conservation funding in these places, they can take partial credit both for leveraging other conservation investments in these areas and for the final outcome. However, tigers are umbrella species for the preservation of biodiversity and just as we can claim that other species such and elephants and rhinos may benefit from a tiger conservation project, tigers must similarly benefit from other conservation streams dedicated to those species and habitats occurring in tiger land, yet this spending has not been factored into our analyses.

We still do not have an accurate estimate of tiger numbers globally, and the only landscape for which we have a recent landscape-wide census is the Russian Far East. Thus tiger trend is not possible to obtain, but the recent 40% reported decline in tiger habitats over the last 10 years does not bode well for tiger populations (Dinerstein et al 2006). Without comparisons, assessing what this trend would have looked like if Save The Tiger Fund were not actively investing in tiger conservation work is open to speculation. If Save The Tiger Fund had doubled its investments over the same period it does not seem beyond the realm of possibility that it would be able to claim one or two more landscape-level success stories for tigers.

Best-practices for landscape-level investments are: 1) A landscape-level plan should serve as a blue-print that coordinates and rallies multiple stakeholders, NGO's, government agencies and donors around a clear set of goals. 2) Monitoring programs across the landscape should be conducted in a coordinated manner in a way that can give landscape-level tiger population estimates and are repeated at 1-4 year time intervals. 3) Grantees must use adaptive management principles to mitigate threats and link them to reduced threats as measured by appropriate indicators and increased habitat, prey and tiger populations. 4) Save The Tiger Fund should build a portfolio of complimentary projects that encourage grantees to collaborate and work to their institutional strengths. 5) Each landscape needs relatively high (200K+ annually) that should be sustained over long periods of time with higher-level landscape outcomes evaluated at 5-10 year periods.

Performance

Grantee selection – On the whole, grantees have

been very versatile and have taken sensible steps to mitigate several different kinds of threats to tigers. However, where grantees have been working in close proximity, there appears to be a duplication of efforts. And though the grantees often work well together on the ground, there are occasional incidents of overlapping final reports, with both grantees claiming credit for doing the same things, and it is unclear what specific roles were played by each party. In the future, potential duplication of effort should be avoided by encouraging close coordination and information-sharing between organizations working in similar areas, and by encouraging grantees to partition activities according to their strengths.

Grantees that have performed poorly were, in most cases, weeded out of the portfolio, demonstrating that STF has been managing its risk carefully. In a few instances, however, subsequent projects were later funded without evaluating final reports from earlier phases, resulting in continued funding of poorly performing grants. To avoid this problem in the future, grantees should be required to demonstrate satisfactory performance during the first phase of their project before receiving further funding to continue work.

Cost effectiveness – The wide range of project types and geographical contexts does not allow us to make any meaningful cost-effectiveness comparisons among project types. However, expert reviewers did specifically examine budgets before the projects were funded to ensure they were reasonable, and applicants proposing excessively expensive projects were either weeded out of the portfolio or asked to revise their request. Given that STF will continue to have a diverse project portfolio, this appears to be a satisfactory way to ensure cost-effectiveness and should be continued in the future.

PROGRAMMATIC ISSUES

Monitoring and evaluation

Indicators – A question frequently posed to STF is "How many tigers did you save?" This question is difficult to answer because the main focus of Save The Tiger Fund is to ensure the continued viability of tiger populations throughout Asia rather than focusing on individual tigers or even individual tiger populations. A handful of grantees have reported rescuing orphaned cubs and sick tigers and tigers caught in poachers' snares, but these rescues are opportunistic and do not truly reflect the core mission of Save The Tiger Fund. More appropriate are questions such as "How many hectares of tiger habitat do you help to protect from poachers each year?" and "How many habitat corridors have you established in degraded lands to re-connect tiger habitat fragments?" But even these relatively simple questions cannot be answered from this meta-evaluation due to poor tracking by grantees and need to be tackled in a follow-up survey.

Grantees use literally hundreds of potential indicators to measure their success, some meaningless and some very useful. The best indicators come from directly monitoring biological variables of interest and relating them to longer-term outcomes such as prey density, tiger density, habitat quality, and patterns of human behavior or attitudes, and allow us to effectively measure outcomes. Other indicators are useful to measure the direct activity outputs of a project; for example, the number of camera-trap-nights is a useful indicator of sampling intensity, and the number of people attending a conference gives an approximate idea of how widely the ideas presented at the conference will be disseminated, but say nothing about outcomes.

Grantees often used a variety of different indicators to quantify similar results. For example, anti-poaching patrolling effort was measured by number of kilometers patrolled, number of anti-poaching staff, and number of anti-poaching man-hours, but all three measures were not used simultaneously (Table 7). Other indicators were used more consistently; for example, the number of poaching-related arrests. However, the 1,560 poaching-related arrests that STF grantees reported over the last 10 years is an underestimate because the number of arrests was not consistently recorded by all grantees, and it is clear from the context of the reports that each grantee had a slightly different definition of the term arrest. The solution to this problem is for Save The Tiger Fund to carefully examine all of the conservation

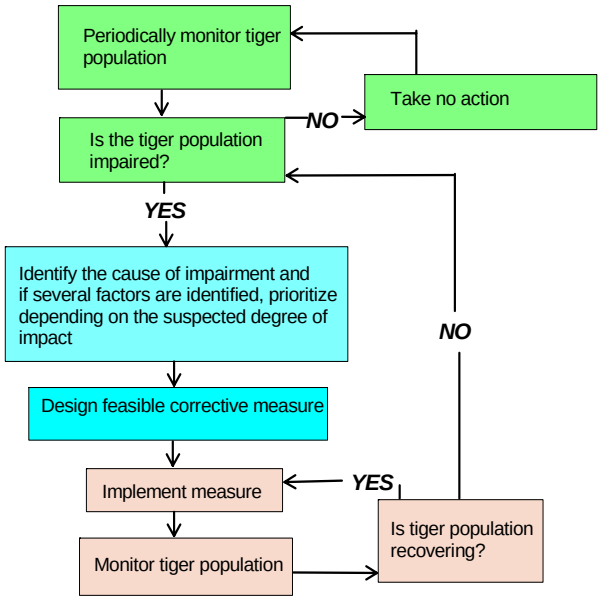

Fig 8: A simplified, hypothetical adaptive management framework for tiger conservation

methods that have been used over the last 10 years, and consult with conservation experts on what the most successful methods are. Once a ranking of methods has been achieved, a standardized list of carefully defined recommended indicators relating to each suite of activities could be prepared and disseminated to grantees who are preparing proposals. Identifying all of the indicators that have been used to date is an important step forward, but any standardization of indicators will need to be undertaken cautiously and should have buy-in from on-the-ground experts and practitioners.

Some indicators are more difficult to standardize because they are not very meaningful unless reported in combination with some other measure. For example, one popular indicator was the number of people taught, but the duration, content, and quality of the message delivered was seldom specified. In these instances, it may be practical to devise some type of index that weighs multiple factors, or to use an existing index such as the Science Citation Index Impact Factor, which is used to assess the potential impact of a paper published in a particular journal.

The STF Council could also consider establishing specific, quantitative goals for the tiger program, using very carefully selected and defined indicators. This would entail a re-structuring of the program from one that is a bottom-up competitive grant-making system that facilitates and encourages innovation and provides some technical guidance to grantees to one that is a top-down goal-oriented contracting program that focuses on completing a predetermined set of activities in each landscape within a specific time frame. Taking this latter approach would represent a dramatic change in philosophy and would entail the council's careful consideration of the pros and cons. This approach would reduce Save The Tiger Fund's ability to fund grants on a truly competitive basis, which is a tremendous strength of the program as it stands. It may also force grantees to attempt to work outside of the geographical and technical areas in which they have good capacity, and could reduce the overall performance.

Logic model – A frequent source of difficulty in evaluating final reports is that the initial proposals had vague objectives that were not quantitatively defined. Scoring the performance of these projects was quite problematic and often the grantee was assumed to be acting in good faith. All grantees are now required to fill out a logic model as part of their application and this measure should go a long way toward resolving this problem. The logic model is a cornerstone of contemporary evaluation practice (Anon 2001) and is a tool to show how a project should be linking specific activities to short-term project outputs and longer-term post-project outcomes. The logic model summarizes the causes and effects of the project and measures hypothesized changes using statistical indicators. The use of logic models has been required since 2005, after being piloted in the National Fish and Wildlife Foundation, and represents a significant advance in the evaluation capacity of Save The Tiger Fund, allowing STF to tie its investments directly to the desired outcomes.

Adaptive management – This concept acknowledges that, given the urgent need to conserve ti-

gers now, management actions must be taken even if we do not have all the information we would like, or we are not sure what all the effects of management might be (Johnson 1999). At its simplest, adaptive management can be defined as "learning from past mistakes" and entails several basic steps: 1) monitoring, 2) identifying a problem, 3) designing and implementing a corrective measure, and 4) monitoring to see if the corrective measure is working (Fig. 8). For example, a project designed to increase tiger numbers in an area, having identified poaching as the main threat, should work on management actions to strengthen anti-poaching operations. A follow-up tiger survey should demonstrate that tiger numbers have increased from the original baseline. If tiger numbers are decreasing, the anti-poaching efforts are either not working or some other threat is, in fact, responsible for the decline and must be identified.

Best practices – To date, all best practices and lessons learned have relied on the professional judgment and learning of STF staff and Council. While this collective experience is extremely valuable and is one of the most valuable assets of Save The Tiger Fund, it is not easily transferable or shared with others. As a result, a continual and systematic grant evaluation mechanism accompanied by site visits is needed. The monitoring tool will allow Save The Tiger Fund to use adaptive management to improve its own grant-making for tiger conservation and to share the lessons learned with others.

Lessons learned – Lessons learned in tiger conservation have been disseminated quite widely judging by STF grantees' impressive list of publications (Appendix B). However, there remains room for improvement. For example, the variety of different approaches to human-tiger conflict mitigation indicates high levels of innovation in each landscape but no convergence of ideas on which are the best practices. STF has identified several key themes in its strategic plan (STF 2005) and should continue to identify important and thematic opportunities to bring key players together to share conservation lessons learned at levels that involve multiple tiger landscapes. STF should facilitate access to information by making all of its grantees' final reports and publications available online.

Long term investments – It is clear that work to save tigers needs long-term commitments to achieve results, but grant awards from STF have been made on a year-to-year basis, often for many consecutive years (Table 3). This has resulted in several programmatic issues: Grantees either get a one-year grant award and draw the work period out by requesting time extensions, or they perform work rapidly and efficiently to achieve short-term outputs, but offer no longer-term goals. This leaves no way to evaluate the collective impact of multiple grants. Often grantees don't report on cumulative progress made on various issues from year to year, leaving evaluation questions about cumulative impacts unanswered. Furthermore, grantees have expressed a desire for reduced application and reporting burdens, and say that longer-term grant commitments would facilitate longer-term planning.

The National Fish and Wildlife Foundation's grant administration system is quite capable of handling longer-term grants, using a phasing system. In 2005, a three-year grant was awarded to a grantee who has an excellent track record with the Foundation. This pilot appears to be going very smoothly with the grantee submitting regular updates and reports from the field. The phased-grant agreement ensures that the grantee completes all activities in the first phase in order to release funds for the second phase. The awarding of fewer, longer-term grants to organizations with established track records demonstrating sound performance should reduce the administration burden on both the Foundation and the grantee and seems to be a logical course of action for Save The Tiger Fund now that is has a three-year rolling commitment of support from the ExxonMobil Foundation. Awarding longer-term grants with well-developed logic models also increases the likelihood of being able to measure biological responses during the lifetime of a project, and the responsibility of conducting a multi-year meta-analysis of performance falls on the grantee rather than on Save The Tiger Fund staff.

CONCLUSION

Save The Tiger Fund has made a significant impact on tiger conservation since 1995, and it has been one of the most reliable funding sources for tiger conservation over that period. One of the great strengths of Save The Tiger Fund is that it has used an independent funding stream to encourage collaborative approaches to conservation that have lead to very different conservation solutions depending on the prevailing social, political, and economic conditions of the various tiger landscapes. The most successful partnerships demonstrated that different organizations each brought different strengths to the table, and that collaborative partnerships between complementary groups can lead to larger, landscape-level outcomes. One of the greatest successes of Save The Tiger Fund has been the increased recognition of the need to adopt an holistic landscape-level approach to tiger conservation that weaves protected core areas into a larger landscape of multiple-use forest buffer zones connected to each other by habitat corridors with the support of local communities.

Continuous support from ExxonMobil and other Save The Tiger Fund donors has played a vital part in global tiger conservation efforts over the last 10 years. We have learned, however, that tigers are a conservation-reliant species. Ensuring continued investments in longer-term projects over the next decade will be essential to ensuring that the successes identified in this evaluation are not undermined. The two landscapes where tigers have had the greatest success over the last 10 years have also received the greatest levels of funding, implying that new sources of funding are needed to scale-up conservation efforts across all the landscapes identified in the STF strategic plan. Until funding levels can be scaled up, existing priorities should be more focused and aimed at achieving landscape-level conservation outcomes and increased numbers of tigers and their prey. Periodic regional IUCN assessments of the tiger's conservation status in each landscape will provide a robust measure of progress toward the wider goal of ensuring a future for wild tigers across their range.

The conservation lessons learned over the last decade have been very well disseminated through extensive grantee publications and *Riding the Tiger – Tiger conservation in human-dominated landscapes*. However, there are opportunities for improvement and Save The Tiger Fund could play a more active role in helping grantees standardize conservation methods and performance indicators and in sharing best practices among tiger conservation landscapes through its website and through topical conferences. No single linear approach will work in all places, given the wide range of threats and social and political conditions found in tiger landscapes. However, Save The Tiger Fund does need to improve its own longer-term tracking of results in each landscape and can achieve this by providing guidance to its grantees on which indicators relate most closely to its conservation goals for the next decade.

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APPENDIX A

SAVE THE TIGER FUND COUNCIL MEMBERS 1995-2006

Edward F. Ahnert (1995-2006)
Executive in Residence, Cox School of Business

John Berry (2000-2006)
Executive Director, Smithsonian's National Zoological Park

Sydney J. Butler (1995-2006)
Former Executive Director, American Zoo and Aquarium Association

Amos Eno * (1995-2000)
Executive Director, New England Forestry Foundation

Peter Jackson* (1997-2003)
Chairman Emeritus, IUCN, Cat Specialist Group

Marshall Jones* (1995-2000)
Acting Director, International Affairs, U.S. Fish & Wildlife Service

Mohammed Khan (1995-2006)
Chairman IUCN, Asian Rhino Specialist Group

Gerald McElvy (2005-2006)
President, ExxonMobil Foundation

Hemanta R. Mishra (2000-2006)
Executive Director Newpeak Foundation

Seema Paul (2000-2006)
Chief, Policy Coordination UNAIDS Secretariat

Colin Rees* (1995-2000)
Consultant, World Bank

Ulysses S. Seal* (1995-1998)
Deceased

John Seidensticker (1995-2006)
Chairman, *Save The Tiger Fund*, Senior Scientist Smithsonian's National Zoological Park

Lee Simmons* (1995-1998)
Director Henry Doorly Zoo

Kenneth Stansell (2000-2006)
Assistant Director, USFWS International Affairs, U.S. Fish & Wildlife Service

Elizabeth F. Stevens* (1998-2006)
Vice President, Disney's Animal Kingdom and Animal Programs, Walt Disney World

Effendy Sumardja (1995-2006)
Senior Advisor, Indonesia State Ministry of Environment

Mel Sunquist (1995-2006)
Professor and Program Director of Ordway Preserve, University of Florida

Jorgen Thomsen* (2004-2006)
Executive Director, Critical Ecosystem Partnership Fund, Vice President, Conservation International

Jeff Trandahl (2006-2006)
Executive Director, National Fish and Wildlife Foundation

Geoffrey C. Ward (1997-2006)
Author, Co-Founder, Tiger Action Fund for India

* STF Council Alumni

APPENDIX B

PUBLICATIONS SUPPORTED BY SAVE THE TIGER FUND

Ahearn, S.C., J.L. Smith, A. R Joshi, and J. Ding 2001. Tigmod: an individual-based spa tially explicit model for simulating tiger/ human interaction in multiple use forests. *Ecological Modeling* 140:81-97

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LIST OF SAVE THE TIGER FUND GRANTEES 1995-2004

1995-0166-001 Minnesota Zoo Foundation **Sumatran Tiger Field Study-I** Field research on the ecology and biology of Sumatran tigers in Way Kambas National Park, Indonesia. Emphasis on development of long-term conservation strategy. $150,000

1995-0166-002 Hornocker Wildlife Institute **Siberian Tiger Project-I** Conduct an intensive field study on the ecology and biology of Siberian tigers in the Russian Far East. Project activities include research and assessment efforts, conservation planning, and environmental education and outreach. $225,000

1995-0166-003 Dallas Zoological Society **Dallas Zoo Exhibit** Support for the design and construction of a new tiger exhibit at the Dallas Zoo. Exhibit will focus on public education and will include a captive breeding facility. $765,000

1995-0166-004 Minnesota Zoo Foundation **Indochinese Tiger Master Plan** Grant funded a workshop in Thailand that developed a managed captive breeding program for Indochinese tigers within the Zoological Parks Organization. $20,000

1995-0166-005 Minnesota Zoo Foundation **Tiger Conservation Management Project** Fund a variety of projects, including: publication of white paper on tiger status and conservation efforts, CBSG newsletter, establishment of tiger information center with 1-800 info line and website. $150,647

1995-0166-006 Hornocker Wildlife Institute **Sikhote-Alin Reserve Extension** Project will provide assistance in funding the Kolumbey extension to the Sikhote-Alin Reserve in the Russian Far East. $50,000

1995-0166-007 American Zoo and Aquarium Association **Tiger Education Priorities** Project Funded the first phase of a project that brought together experts in education, design, and interpretation to develop priority projects for funding by the Save The Tiger Fund, including a traveling exhibit & graphics package for AZA member institutions. $8,213

1995-0166-008 Zoological Society of London **European Amur Tiger Meeting** The project funded a meeting in Moscow of the European zoological community. Meeting focused on the development of a Action Plan for the Amur Tiger. $45,000

1995-0166-009 Smithsonian Institution **Smithsonian Tiger! Exhibits** A three-year committment, this project will fund restoration and development of tiger exhibits at the Museum of Natural History (tiger diorama) and the National Zoo (Smithsonian Tiger!). $300,000

1995-0166-010 National Geographic Society **Tiger Cards** Publish a four-page informational pullout in National Geographic World magazine to educate readers on basic tiger facts with an emphasis on the tiger's plight. $86,000

1995-0166-011 Minnesota Zoo Foundation **Asia Tiger GIS** Funds will be used to support the costs of developing a GIS database for Indonesia in relation to Sumatran tigers. $20,000

1995-0166-012 World Wildlife Fund **Tiger Assessment-I** Project developed a priority-seeking framework for tiger conservation activities across the tiger's range. Report will serve as tool in determining where to use tiger conservation funds. $25,000

1995-0166-013 American Zoo and Aquarium Association **Traveling Exhibit and Graphics** Project will develop a traveling exhibit and graphics package that will be used by AZA member institutions. 151,787

1995-0166-014 Thai Tiger Conservation Fund **Rachaburi Tiger Program** Grant supported the purchase of printing equipment for the Khao Prathub Chang Wildlife Conservation Station for the production of educational brochures and leaflets. $13,000

1995-0166-015 Indonesian Zoological Parks Association **Sumatran Tiger Immobilization Kits** Purchase eight immobilization kits and other essential equipment for zoos in the Indonesian system so that annual physical examinations of tigers can be performed by zoo staff. $20,000

1995-0166-016 McCann-Erickson **STF Fundraising Appeal** Develop and produce a flyer on the Save The Tiger Fund. The flyer included an appeal for donations and was distributed by Exxon with its credit card bills. This project has raised public donations that have been used to help fund other STF projects. $72,712

1996-0134-017 Minnesota Zoo Foundation **Sumatran Tiger Field Study-II** Continue second year support for research on the ecology and biology of Sumatran tigers in Way Kambas National Park, Indonesia. Project research is yielding information important to the development of a long-term conservation strategy. $128,300

1996-0134-018 Hornocker Wildlife Institute **Siberian Tiger Project-II** Continued second year support for the field study of the ecology and biology of Siberian tigers in the Russian Far East, with an emphasis on developing a long-term conservation strategy. $225,000

1996-0134-019 Zoological Society of London **Action Plan for the Amur Tiger** Implement priority activities for the conservation of the Amur tiger, including improved captive breeding programs, public education efforts, and communication links to field projects. $41,000

1996-0134-020 Ranthambhore Foundation **Tiger Link** Fund meetings for Tiger Link, a network of groups and individuals committed to saving the Bengal tiger, and fund the publication of the Tiger Link newsletter. $7,000

1996-0134-021 Minnesota Zoo Foundation **Tiger Information Center-I** Develop and maintain a comprehensive, worldwide database on tigers and tiger conservation activities. $85,850

1996-0134-022 World Wildlife Fund **Chitwan Habitat Restoration** Restore and enhance riverine and grassland habitat in and around Royal Chitwan National Park in Nepal for the benefit of resident tiger populations. $58,096

1996-0134-023 Ranthambhore Foundation **Kaziranga National Park Anti-Poaching** Fund the purchase of a 4x4 vehicle and a jet boat for Kaziranga National Park in India. The park has a wealth of wildlife, including 50-75 tigers, and the park staff currently lack the infrastructure and equipment to combat poachers. $25,000

1996-0134-024 Taman Safari Indonesia **Sumatran Tiger Masterplan** Fund the completion of the Sumatran Tiger Masterplan. The project is based on recommendations made at the Indonesian Parks Association Sumatran tiger workshop and is designed to develop a captive management program for tigers in Indonesian zoos. $11,250

1996-0134-025 Global Survival Network **Siberian Tiger Protection Project** Support for the Global Survival Network's ongoing efforts to protect the Siberian tiger in Russian Far East. The project includes anti-poaching operations, investigations and intelligence, environmental education, and community outreach. $52,090

1996-0134-026 University of Minnesota **Workshop on Tiger Census Techniques** Assist with the presentation of a five-day conference on tiger censusing techniques. The conference will be held in Nepal, and will bring together experts from all tiger range states in an effort to establish a consensus on effective techniques. $19,820

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1996-0134-027 World Wildlife Fund **Tiger Assessment-II** Publish WWF and WCS innovative assessment of the viability and relative importance of the world's remaining populations of wild tigers. Publication will allow wide distribution of this study so that results can help guide conservation efforts in Asia. $10,600

1997-0082-028 Malaysia Department of Wildlife and National Parks **Malaysia Tiger Conservation and Protection** Support a nationwide tiger conservation program in Malaysia. Project components include censusing and population assessment studies, habitat protection, anti-poaching activities, and community outreach and education programs. $99,655

1997-0082-029 University of Minnesota **Thailand Tiger Assessment & Conservation** Assess the status of tiger populations in Thailand's western forests, on the border with Myanmar. Data gained from field studies will help complete a GIS-based management plan for the region's forests and its tigers. $43,000

1997-0082-030 Ranthambhore Foundation **Manas National Park Anti-Poaching Project** Supply three 4x4 vehicles to Manas National Park for use in anti-poaching patrols. The park, which rests on the Indian-Bhutan border, contains abundant wildlife, including tigers and elephants, but currently faces enormous threats from poaching. $27,000

1997-0082-031 World Wildlife Fund **Cambodia Tiger Conservation** Develop a landscape-level conservation plan that emphasizes tiger conservation in the Virachay-Xe Piane-Yok Don TCU in Cambodia. Project activities include ground surveys of the tiger and other wildlife populations and training local conservationists. $30,000

1997-0082-032 World Wildlife Fund **Conservation Technology Training** Hold a workshop to train local park and tiger reserve managers in the fundamentals of using geographic information systems to enhance the conservation of the land and wildlife they manage. $9,500

1997-0082-033 Hornocker Wildlife Institute **Siberian Tiger Project-III** Third-year support for a field study of the ecology and biology of Siberian tigers in the Russian Far East. Project research continues to produce valuable information for the development of a large-scale management plan for the region. $150,000

1997-0082-034 Wildlife Conservation Society **Karnataka Tiger Conservation** Conduct field surveys, anti-poaching operations, law enforcement and volunteer training, environmental education, and habitat acquisition efforts to secure the survival of tigers and their prey in southern India. $100,000

1997-0082-035 Minnesota Zoo Foundation **Sumatran Tiger Field Study-III** Third-year support to research the ecology and biology of Sumatran tigers in Way Kambas National Park, Indonesia. Project research is yielding information important to the development of a long-term conservation strategy. $106,053

1997-0082-036 Minnesota Zoo Foundation **Reproductive Problems of S. China Tigers** Provide technical training to Chinese zoo staff and develop a set of medical and management recommendations to ensure the overall health and to increase the reproductive output of the captive South China tiger population. $29,762

1997-0082-037 Minnesota Zoo Foundation **Tiger Information Center-II** Continued support for the maintenance and enhancement of a comprehensive, worldwide database on tigers and tiger conservation. Project includes a toll-free information line and an award-winning Internet site. $50,250

1997-0082-038 National Fish and Wildlife Foundation **Year-of-the-Tiger Conference Planning** Fund the planning and development of the Year-of-the-Tiger Conference, to be held in Dallas in February 1998. The conference will bring together the world's experts on tiger conservation to develop specific plans to save the species. $3,244

1997-0082-039 Global Survival Network **Siberian Tiger Protection Project-II** Second year of support for the Global Survival Network's ongoing efforts to protect the Siberian (Amur) tiger in the Russian Far East. The project includes anti-poaching operations, investigations, and intelligence, and environmental education. $44,160

1997-0082-040 Institute of Climbers and Nature Lovers **Villagers & Tigers: Palamau Tiger Reserve** Conduct conservation education activities with villagers living near the Palamau Tiger Reserve in India. Purchase an electric generator to help with presentations and supply badly needed medicine for the villagers to improve living conditions. $4,315

1997-0082-041 Ranthambhore Foundation **Tiger Link-II** Second year of support for Tiger Link, a network of groups and individuals committed to saving the Bengal tiger. Project funds will support group meetings and the publication of the Tiger Link newsletter. $9,000

1997-0082-042 TRAFFIC East Asia **Tiger Bone and Musk Substitutes Video** Produce a video synopsis of "The First International Symposium on Endangered Species Used in Traditional Chinese Medicine: Substitutes for Tiger Bone and Musk." Video will be distributed widely in Asia to educate TCM practitioners and consumers. $20,000

1997-0082-043 Wildlife Conservation Society **Reducing Use of Tiger Products in China** Raise public awareness and influence patterns of use of tiger-based products among the Chinese in order to reduce pressures on tiger populations in the wild. Work includes education of TCM practitioners and media campaigns aimed at the general public. $41,615

1997-0082-044 Zoological Society of London **Riding the Tiger: Tigers 2000** Proceedings Support the publication of "Riding the Tiger: Tiger conservation in human-dominated landscapes" The book consists of the edited proceeds of the Tigers 2000 Symposium and will bring important tiger conservation information to the field at a subsidized cost. $22,000

1997-0082-045 Dr. David Macdonald at Lady Margaret Hall **Camera Traps for Tiger Conservation** Purchase camera traps to monitor tiger populations in Bandhavgarh National Park in India as part of a larger research, management, and protection effort for tigers and other wildlife in the area. $17,970

1997-0082-046 Long Haymes Carr **STF Education and Outreach-** Produce an education booklet, a poster, and other materials on tigers and tiger conservation. Materials are designed to raise awareness about the tiger's plight and generate public donations for the Save The Tiger Fund. $50,497

1997-0082-047 Hornocker Wildlife Institute **Leasing Habitat for the Amur Tiger** Lease and manage over 100,000 hectares of land in the Russian Far East as a hunting management unit with three main objectives: 1) to secure prime tiger habitat; 2) to increase prey densities; and 3) to provide source of revenue for local inhabitants. $20,800

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1998-0093-048 National Fish and Wildlife Foundation **Year of the Tiger Conference** Support for the Year-of-the-Tiger Conference, a three-day gathering of many of the world's experts on tiger conservation. Held in Dallas on February 10-12, 1998, the conference focused on formulating and strengthening tiger protection and management plan $261,038

1998-0093-049 Operation Eye of the Tiger – **India Conservation in Corbett Tiger Reserve** Enhance tiger conservation programs in and around Corbett Tiger Reserve in India. Overall objective is to link tiger conservation measures with efforts to improve living conditions of the villagers, thus establishing local support for conservation. $50,000

1998-0093-050 Ranthambhore Foundation **Community Conservation around Ranthambhore** Protect the tiger population of Ranthambhore National Park in India by giving the local people a vested interest in the tiger's survival. Efforts aimed at reducing the biotic pressures on forest resources while establishing alternate fuel wood sources. $80,000

1998-0093-051 Tiger Watch **Ranthambhore Resettlement Project** Planning grant to determine feasibility of a voluntary resettlement program for 70 families currently living around the edge of Ranthambhore National Park. $3,000

1998-0093-052 Wildlife Institute of India **Scholarships for Tiger Research** Establish a scholarship program at the Wildlife Institute of India for worthy but financially disadvantaged students studying tigers, their prey, or landscape management to improve the number of qualified conservation biologists in India. $12,000

1998-0093-053 Wildlife Protection Society of India **Wildlife Law Enforcement Network** Improve wildlife law enforcement in India by providing newly appointed Honorary Wildlife Wardens with the information necessary to combat wildlife crimes. Project will provide wardens with copies of relevant laws and a complete training manual. $20,840

1998-0093-054 King Mahendra Trust for Nature Conservation **Chitwan Habitat Restoration-II** Continue highly successful habitat regeneration programs in buffer zones around Royal Chitwan National Park in Nepal. This year's project will extend effort to two important dispersal corridors for tigers. $120,000

1998-0093-055 University of Minnesota **Nepalese Tiger Conservation** Design and implement a long-term monitoring program for tiger habitat inside and outside of Nepal's protected areas. Project will also include training of Nepalese scientists and technicans to ensure that the program is sustainable. $44,000

1998-0093-056 Hornocker Wildlife Institute **Siberian Tiger Project-IV** Continue support for the operation of the Siberian Tiger Project in the Russian Far East. Of special importance in 1998 will be the refinement and implementation of large-scale conservation strategies and land-use plans for the region and its wildlife. $125,000

1998-0093-057 Wildlife Foundation Environmental **Education for the Amur Tiger** Conduct widespread outreach and educational activities aimed at enlightening the local population about the tiger's plight and their vital role in its continued survival. $50,000

1998-0093-058 Taman Safari Indonesia **Rescuing Problem Tigers in Sumatra** Capture problem tigers before they kill or injure villagers and livestock and transfer these animals to captive breeding facilities. Project aims to reduce negative press that surrounds human-tiger conflict and diminishes support for conservation. $36,720

1998-0093-059 Minnesota Zoo Foundation **Sumatran Tiger Field Study-IV** Continue support for the operation and expansion of fieldwork in Sumatra. Special emphasis of this year's project will be laying the groundwork to duplicate lessons learned in Way Kambas to other tiger habitats across Sumatra. $85,218

1998-0093-060 Wildlife Conservation Society **Bukit Barisan Tiger Conservation Program** Develop and implement a long-term program to ensure the conservation of tigers in Bukit Barisan Selatan National Park in southern Sumatra. Data gained from research will help in formulating a country-wide tiger assessment and conservation strategy. $47,600

1998-0093-061 University of Florida **Taman Negara (Malaysia) Field Study** Develop and refine sampling techniques necessary to estimate the density of tigers and abundance of their prey species in the tropical rainforest of pennisular Malaysia as part of a larger effort to protect the region's tigers and other wildlife. $78,176

1998-0093-062 Minnesota Zoo Foundation **Tiger Information Center-III** Continue the maintenance and operation of the Tiger Information Center, a comprehensive information resource on tigers and tiger conservation. The centerpiece of the project is the www.5tigers.org website. $65,000

1998-0093-063 Global Survival Network **Asian Conservation Awareness Program** Develop public service announcements that will run in movie theaters in Asia. The announcements feature Jackie Chan explaining the link between the consumption of products containing wildlife and the poaching and destruction of those species in the wild. $34,025

1998-0093-064 TRAFFIC East Asia **Review of Trade in Tiger Bones** Support the research and publication of an updated report on the status and trends in the worldwide trade in tiger parts. The report will document the root causes of tiger poaching and advise where money can be best spent to reduce the problem. $86,085

1998-0093-065 TRAFFIC Europe **Workshop on Enforcing Trade Controls** Organize a workshop that brings together the relevant parties in an effort to increase collaboration amongst wildlife trade enforcement agencies in the Russian Far East and East Asia. $70,000

1998-0093-066 World Wildlife Fund **TCM Communities and Tiger Conservation** Develop and implement a pilot program, in partnership with the Traditional Chinese Medicine (TCM) community, to educate TCM consumers about endangered species issues. Program features a one-day symposium and a widespread education and awareness campaign. $80,000

1998-0093-067 Wildlife Conservation Society **Karnataka Tiger Conservation-II** Second year of support for a large-scale tiger conservation program in Karnataka state in southern India. Project work includes field surveys, anti-poaching operations, training, environmental education, and monitoring operations. $104,900

1998-0093-068 Wildlife Conservation Society **Action Plan for Myanmar** Tiger Conservation Develop a scientifically based National Tiger Action Plan for Myanmar to ensure the long-term survival of the country's wild tigers. The project is conducted in close partnership with the Myanmar Department of Forestry. $65,700

1998-0093-069 Cat Action Treasury **Tiger Protection & Monitoring in Cambodia** Determine the status of the tiger and other endangered large mammals in Cambodia and strengthen national monitoring and law enforcement capacity to protect these animals and their forest habitat. $60,000

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1998-0093-070 Global Survival Network **Anti-Poaching and Education in Myanmar** Working with a local NGO, FREDA, launch a community-based conservation program in Myanmar. The program focuses on anti-poaching, conservation education, and buffer zone management in and around Alaungdaw Kathapa National Park. $42,565

1998-0093-071 Global Survival Network **Phoenix - Tigers & Biodiversity in Russia** Provide support for anti-poaching operations in the Russian Far East. Project also supports the initial launch of Phoenix, a Russian organization. Goal is to transfer program to Russian control to ensure sustainability and increase local support. $75,150

1998-0093-072 Harsha Reddy, Contractor **Tiger Conservation in Andhra Pradesh** Develop a small-scale tiger monitoring and protection program in Nagarjuna Sagar-Srisailam Tiger Reserve, Andhra Pradesh, in southern India. Project aims to implement locally sensitive conservation actions to reduce human-tiger conflict in the area. $4,100

1998-0093-073 Wildlife Conservation Society **Reducing Use of Tiger Products in China-II** Second-year support to raise public awareness and influence patterns of use of tiger-based products among the Chinese in order to reduce pressures on tiger populations in the wild. Work includes education of TCM practitioners and media campaign. $52,485

1998-0093-074 Wildlife Conservation Society **Khabarovski Krai Protected Areas Network** Support the initial stages of a large-scale, long-term effort to expand the protected areas network in Khabarovski Krai by 25,000 square kilometers of tiger habitat. $44,400

1998-0093-075 Zoological Society of London **Riding the Tiger: Publication/ Distribution** Provide additional support for the publication of the edited proceedings of the Tigers 2000 Symposium. STF support allowed the book, an important resource for tiger conservation, to get to people in Asia who would otherwise not have received a copy. $48,000

1999-0268-001 Wildlife Foundation **Environmental Education for Amur Tigers-II** Continue environmental education and outreach activities aimed at enlightening the local population about the tiger's plight and their vital role in its continued survival. $20,000

1999-0268-002 Phoenix Fund **Human-Tiger Conflict Response Team** Coordinate a comprehensive conflict response team aimed at reducing and preventing human-tiger conflicts throughout the Russian Far East. Project is a collaborative effort of many concerned parties in the area. $50,000

1999-0268-076 Wildlife Institute of India **Tigers, Prey, and Humans in Rajaji-Corbett** Explore the interactions among large herbivores, domestic stock, tigers, and people in Rajaji-Corbett National Park in India. Project will focus on disturbance of protected areas by humans and how that impacts the ecology of tiger and prey populations. $5,000

1999-0268-077 King Mahendra Trust for Nature Conservation **Chitwan Habitat Restoration-III** Third year support for highly successful habitat regeneration programs in buffer zones around Royal Chitwan National Park in Nepal. This year's project will restore another 330 acres of community forest in the parks buffer zone. $100,000

1999-0268-078 Operation Eye of the Tiger – India **Conservation in Corbett Tiger Reserve-II** Continue to enhance tiger conservation programs in and around Corbett Tiger Reserve. Overall objective is to link tiger conservation measures with efforts to improve living conditions of the villagers, thus establishing local support for conservation. $50,000

1999-0268-079 Prakratik Society **Community Health Care and Conservation** Support community health care and family planning work outside of Ranthambhore National Park in India. Family planning and population control are the keys to the long-term conservation of the park's tigers and other wildlife. $30,280

1999-0268-080 Prakratik Society **Biogas Energy and Forest Conservation** Construct up to 50 biogas units in villages surrounding Ranthambhore National Park in India. Biogas units, which run on fermented manure, provide an alternative to wood fires for cooking and light and reduce pressure on protected forests. $14,316

1999-0268-081 Ranthambhore Foundation **Tiger Link-III** Third year of support for Tiger Link, a network of groups and individuals committed to saving the wild tigers. Project funds will support group meetings and the publication of the Tiger Link newsletter. $9,000

1999-0268-082 University of Florida **Taman Negara Field Study-II** Continue to develop and refine sampling techniques necessary to estimate the density of tigers and abundance of their prey species in the tropical rainforest of pennisular Malaysia as part of an effort to protect the region's tigers and other wildlife. $59,682

1999-0268-083 Wildlife Conservation Society **Thailands Tigers - Status and Protection** Determine status of tigers in Thailand through rapid assessment techniques, train Forest Department guards in survey methods, and conduct anti-poaching efforts to conserve wild tigers throughout Thailand. $50,000

1999-0268-084 Minnesota Zoo Foundation **Rapid Assessment of Sumatran Tigers** Expand work and lessons from project in Way Kambas to other tiger habitats across Sumatra. Conduct rapid assessment of tiger and prey populations in these sites in an attempt to qualify tiger abundance and threats to their long-term survival. $70,000

1999-0268-085 Hornocker Wildlife Institute **Siberian Tiger Project-V** Continue support for the operation of the Siberian Tiger Project in the Russian Far East. Of continued importance in 1999 will be the refinement and implementation of large-scale conservation strategies and land use plans for the region and its wildlife. $70,000

1999-0268-086 Lazovsky State Nature Reserve **Amur Tiger Protection in Lazovsky Reserve** Protect Amur tigers in Lazovsky State Nature Reserve in the Russian Far East through improved fire-fighting and anti-poaching operations. Area supports a healthy tiger population and good habitat but is under threat from illegal hunting and other abuses. $25,000

1999-0268-087 Far Eastern Branch of Russian Academy of Sciences **Monitoring Amur Tigers in Primorsky Krai** Monitor tiger and prey abundance throughout Primorsky Krai in the Russian Far East to evaluate trends in the Amur tiger population and assess effects of conservation measures. $34,900

1999-0268-088 Center for the Protection of Wild Nature (Zov Taigi) **Outreach and Education in Russian Far East** Continue support to reduce human-tiger conflict in the Russian Far East through outreach and education efforts aimed at the local population. Media coverage campaigns will be expanded and efforts to disseminate publications and information increased. $30,000

1999-0268-089 Global Survival Network **Asian Conservation Awareness Program-II** Continue support for the Asian Conservation Awareness Program, an educational and outreach effort aimed at reducing the consumption and use of tiger parts and other endangered species. Multi-media approach used to reach wide audience across Southeast Asia. $30,975

1999-0268-090 Minnesota Zoo Foundation **Tiger Information Center-IV** Continue the maintenance and operation of the Tiger Information Center, a comprehensive information resource on tigers and tiger conservation. The centerpiece of the project is the www.5tigers.org website. $50,000

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1999-0268-091 Wildlife Conservation Society **Tigers in the 21st Century Workshop** Support a tiger conservation workshop hosted by the Wildlife Conservation Society. The workshop will examine what is working and what is not working in an attempt to revise and refine priorities for wild tiger conservation. $30,000

1999-0268-092 Wildlife Conservation Society **Karnataka Tiger Conservation-III** Third year of support for a large-scale tiger conservation program in Karnataka state in southern India. Project work includes field surveys, monitoring, anti-poaching operations, training, and conservation education. $82,900

1999-0268-093 World Wildlife Fund **Tiger Conservation Enhancement in Bhutan** Provide support for a large-scale tiger conservation effort in the Kingdom of Bhutan. Overall goal of project is to protect core areas and conserve existing corridors to create a large system of protected areas for tigers and other wildlife. $100,000

1999-0268-094 University of Minnesota **Nepalese Tiger Conservation-II** Continue work on the implementation of a long-term monitoring program for tiger habitat inside and outside of Nepal's protected areas. Project also focuses on training of Nepalese scientists and technicians to ensure that program builds local capacity. $39,800

1999-0268-095 University of Minnesota Thailand **Tiger Assessment/ Conservation-II** Continue work to assess the status of tiger populations in Thailand's western forests, on the border with Myanmar. Data gained from field studies will help complete a GIS-based management plan for the region's forests and its tigers. $23,253

1999-0268-096 Wildlife Conservation Society **Action Plan for Myanmar Tiger Conservation-II** Continue with efforts to develop a scientifically based National Tiger Action Plan for Myanmar to ensure the long-term survival of the country's wild tigers. The project is conducted in close partnership with the Myanmar Department of Forestry. $60,000

1999-0268-097 Wildlife Conservation Society **Bukit Barisan Tiger Conservation Program-II** Continue to implement a long-term program to ensure the conservation of tigers in Bukit Barisan Selatan National Park in southern Sumatra. Data gained from research will help in formulating a country-wide tiger assessment and conservation strategy. $38,100

1999-0268-098 Phoenix Fund **Operation Amba Wildlife Protection** Support Operation Amba's anti-poaching efforts in the Russian Far East. Like earlier grants to the Global Survival Network, the Phoenix Fund helps coordinate funding and logistical support for government anti-poaching teams. $58,031

1999-0268-099 Sikhote-Alin Biosphere State Reserve **Sikhote-Alin Forest Fire Prevention** Provide support to the Russian Far East's premier protected area for tigers – Sikhote-Alin Reserve - to increase fire-fighting and patrolling capacity. $15,000

2000-0182-001 University of Minnesota **Cambodia Community-based Monitoring** Establish an office and staff at the two largest Tiger Conservation Units in Cambodia to train local community members to be wildlife technicians and patrol officers to monitor wildlife populations and control poaching and other human disturbance. $90,980

2000-0182-002 WildAid **Operation Khao Yai: Thailand Protection** Collect data to estimate populations of tigers and their prey and target zones of poaching activity. Project will also develop community outreach and education measures for select inhabitants of buffer zone communities and local village youth. $56,000

2000-0182-003 Center for Wildlife Studies **Panna (India) Predator/Prey Project** Determine the prey base requirement for viable tiger populations in dry tropical forests of India. Evaluate tiger habitat and develop an understanding of predator-prey relationships and prey availability. Project will influence management plans for area. $47,669

2000-0182-004 Center for Wildlife Studies **Prey Study in Bhadra Tiger Reserve** Study the correlation between prey densities and habitat type in the Bhadra Tiger Reserve. Information will be used to develop management plans focused on increasing prey availability for the recovery of local tiger populations. $6,510

2000-0182-005 Prakratik Society **Community Conservation around Ranthambhore-II** Provide family planning and primary health care services to the local people in areas around Ranthambhore National Park and thus help engender support for conservation in the region, as well as install biogas units to reduce demand for park timber. $50,000

2000-0182-006 King Mahendra Trust for Nature Conservation **Chitwan Habitat Restoration-IV** Fourth year of support for highly successful habitat regeneration programs in buffer zones around Royal Chitwan National Park in Nepal. This year's project will restore another 400 hectares of forest that is currently highly degraded. $100,000

2000-0182-007 Fauna and Flora International **Kerinci Seblat Tiger Protection Project** Provide immediate support to Kerinci Seblat Park authorities to take action to detect, prevent, and deter tiger poaching activities in and around the park. Project will establish and train special protection units. $40,000

2000-0182-008 Wildlife Conservation Society **Reducing Use of Tiger Products in China-III** Third year of support to raise public awareness and influence patterns of use of tiger-based products among the Chinese in order to reduce pressures on tiger populations in the wild. Work includes education of TCM practitioners and a media campaign. $30,000

2000-0182-009 WildAid **Asian Conservation Awareness Program-III** Continue support for the Asian Conservation Awareness Program, an educational and media-based outreach effort aimed at reducing the consumption and use of tiger parts and endangered species. This year's project will focus on mainland China. $30,000

2000-0182-010 Minnesota Zoo Foundation **Tiger Information Center-V** Continue the maintenance and operation of the Tiger Information Center, a comprehensive information resource on tigers and tiger conservation. The centerpiece of the project is the website. $59,260

2000-0182-011 Lazovsky State Nature Reserve **Amur Tiger Protection in Lazovsky Reserve-II** Continue support for protecting Amur tigers in Lazovsky State Nature Reserve in the Russian Far East through improved fire-fighting and anti-poaching operations. Area supports a healthy tiger population and good habitat but is under threat from poaching. $25,000

2000-0182-012 Sikhote-Alin Biosphere State Reserve **Anti-Poaching for Siberian Tiger Protection** Reduce the poaching threat to tigers and their prey by organizing and increasing the capacity of Sikhote-Alin Reserve protection staff. Project will supply the necessary equipment and training and develop a comprehensive workplan. $27,000

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2000-0182-013 Phoenix Fund **Operation Amba Siberian Tiger Protection** Continue successful anti-poaching activities and expand the capacity of the Bikin and Kirovsky mobile anti-poaching teams in the northern parts of the Primorsky Krai in Russia. Project will purchase equipment and increase public awareness. $46,561

2000-0182-014 Wildlife Conservation Society **Long-term Monitoring of Amur Tigers in Russia** Provide a comprehensive and long-term approach to monitoring status of the Amur tiger population in the Russian Far East. Continue with standardized methodologies developed during the first two years of the program and plan a comprehensive assessment. $41,500

2000-0182-015 Ranthambhore Foundation **Tiger Link-IV** Fourth year of support for Tiger Link, a network of groups and individuals committed to saving the wild tigers. Project will support group meetings and the publication of the Tiger Link newsletter. $12,000

2000-0182-016 World Wildlife Fund **Linking Protected Areas of Western Terai** Link protected areas along India-Nepal border, creating a network of corridors and a habitat complex that is managed as a cohesive unit for the benefit of tigers and other species. Activities will include habitat management, restoration, and education. $50,000

2000-0182-017 King Mahendra Trust for Nature Conservation **Tiger Habitat Restoration in Royal Bardia Park** Monitor and restore degraded tiger habitat and provide economic incentives, education, and alternative energy sources to local communities in order to garner support for tiger conservation, using successes gained in Chitwan as a model. $100,000

2000-0182-018 University of Florida **Taman Negara Field Study-III** Continue to develop and refine sampling techniques necessary to estimate the density of tigers and abundance of their prey species in the tropical rainforest of peninsular Malaysia as part of an effort to protect the region's tigers and other wildlife. $23,539

2000-0182-019 Wildlife Conservation Society **Bukit Barisan Tiger Conservation Program-III** Final year implementing program to ensure the conservation of tigers in Bukit Barisan Selatan National Park in southern Sumatra. Data gained from research will help in formulating a country-wide tiger assessment and conservation strategy. $50,000

2000-0182-020 Wildlife Conservation Society **Action Plan for Myanmar Tiger Conservation-III** Final year of support for developing a scientifically based National Tiger Action Plan for Myanmar to ensure the long-term survival of the country's wild tigers. Project is conducted in close partnership with the Myanmar Department of Forestry. $30,000

2000-0182-021 Bach Ma National Park **Tiger Ecology in Bach Ma National Park** Monitor and document tiger movement, population size, and prey density in biologically productive core and buffer zones of Bach Ma National Park in Vietnam. Research will provide insight into recent declines of tiger and prey populations. $10,000

2000-0182-022 Wildlife Conservation Society **Cambodia Tiger Action Plan** Develop a National Tiger Action Plan with the Royal Government of Cambodia, where there is currently inadequate data for setting tiger conservation priorities. Activities include mapping and setting priorities for surveying tigers and prey species. $66,000

2000-0182-023 WildAid **Bokor Training and Protection Support** Build capacity of Cambodian government agencies such as the Ministry of Environment and park authorities to protect Bokor National Park in Cambodia through development of professional training courses, comprehensive protection plans, and other activities. $28,000

2000-0182-024 World Wildlife Fund **Strengthening the Rhino and Tiger Conservation Act** Aid federal agencies in the implementation of the Rhinoceros and Tiger Conservation Act to reduce the demand for and illegal trade in tiger derivatives. $50,000

2001-0152-001 Lazovsky State Nature Reserve **Scent Dog Monitoring of Amur Tigers** Use trained scent dogs to identify and help track tigers in Lazovsky State Nature Zapovednik. Project will allow more accurate and reliable monitoring to evaluate ongoing anti-poaching efforts in a key area for tiger habitat in the Russian Far East. $20,000

2001-0152-002 Wildlife Foundation **Environmental Education for Amur Tigers-III** Continue environmental education and outreach activities aimed at enlightening the local population about the tiger's plight and their vital role in its continued survival. Focus will be on increased awareness of local media and industry. $22,000

2001-0152-003 Phoenix Fund **Primorsky Krai Customs Service Training** Support Customs Service investigative work aimed at detecting and eliminating illegal wildlife trade channels, and help streamline its operations by providing up-to-date equipment and other vital resources. $35,000

2001-0152-004 Center for the Protection of Wild Nature (Zov Taigi) **Outreach and Education in Russian Far East-II** Reduce human-tiger conflict in the Russian Far East through multi-media outreach and education efforts aimed at local communities. Media coverage campaigns will be expanded and efforts to disseminate publications and information increased. $30,000

2001-0152-005 University of Minnesota **Nepalese Tiger Conservation-III** Continue work on the implementation of a long-term monitoring program for tiger habitat inside and outside of Nepal's protected areas. Project also focuses on training of Nepalese scientists and technicians to ensure that program builds local capacity. $40,000

2001-0152-006 Bangladesh Ministry of Environment and Forest **Tiger Status in the Sundarbans** Conduct a scientific assessment of tiger populations in the Sundarbans of Bangladesh, increase local capacity of habitat management officials, and develop a comprehensive tiger conservation plan for this critically endangered tiger habitat. $70,000

2001-0152-007 Vidharba Tiger Research Foundation **Forest Guard Equipment for Pench Reserve** Support the efforts of Pench National Park in India by purchasing forest guard equipment such as clothing and providing transportation in order to help staff better serve the park and protect its wildlife. $3,360

2001-0152-008 Prakratik Society **Community Conservation around Ranthambhore-III** Provide family planning and primary health care services to the local people in areas around Ranthambhore National Park, helping to engender support for conservation in the region. Install biogas units to reduce demand for timber from the park. $50,000

2001-0152-009 Kudremukh Wildlife Foundation **Community Tiger Conservation at Kudremukh** Reduce human threats to tigers and their prey and habitats in Kudremukh National Park through increased local conservation leadership, improved park protection, and the development of a long-term monitoring system for tigers. $13,167

2001-0152-010 Living Inspiration for Tribals **Community Tiger Conservation in Nagarahole** Support volunteer resettlement programs around Nagarahole National Park. Project will reduce human-tiger conflict by generating local support for law enforcement through community education. $21,419

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2001-0152-011 Bhadra Wildlife Conservation Trust **Community Tiger Conservation in Bhadra Reserve** Consolidate high-quality tiger habitat within and around the Bhadra Tiger Reserve by reducing human-tiger conflict through voluntary resettlement, mobilizing public support through education, and exploring possibilities of land acquisitions. $22,664

2001-0152-012 International Rhino Foundation **Taman Negara Tiger Protection** Increase capacity of Rhino Protection Units in Taman Negara, Malaysia. Equipment will be provided to allow for more effective anti-poaching efforts and better monitoring of tigers in the Taman Negara National Park. $70,000

2001-0152-013 Cat Action Treasury Cambodia **Community-based Monitoring-II** Continue conservation efforts in three critical Tiger Conservation Units in Cambodia. Project will train local community members to monitor wildlife populations, control poaching, and raise conservation awareness through village-level workshops. $96,000

2001-0152-014 WildAid **Operation Khao Yai: Thailand Protection-II** Continue anti-poaching efforts and measuring wildlife population trends. Project will also develop community outreach and education measures for buffer zone communities and develop and share protection model with other parks in Southeast Asia. $75,000

2001-0152-015 Fauna and Flora International **Kerinci Seblat Tiger Protection Project-II** Continue to provide support to Kerinci Seblat Park authorities to take action to detect, prevent, and deter tiger-poaching activities in and around the park. Project will establish and train special protection units. $55,000

2001-0152-016 WildAid **Asian Conservation Awareness Program-IV** Continue support for the Asian Conservation Awareness Program, an educational and media-based outreach effort aimed at reducing the consumption and use of tiger parts and endangered species. Project will focus on mainland China for its second year. $50,000

2001-0152-017 Minnesota Zoo Foundation **Tiger Information Center-VI** Continue the maintenance and operation of the Tiger Information Center, a comprehensive information resource on tigers and tiger conservation. The centerpiece of the project is the website. $30,798

2001-0152-018 National Fish and Wildlife Foundation **Save The Tiger Fund Promotions** Support outreach and communications efforts for the Save The Tiger Fund. Raise public awareness of the plight of the tiger and the role of the Save The Tiger Fund in conservation efforts of this highly endangered species, its prey, and its habitat. $19,928

2001-0152-019 National Fish and Wildlife Foundation **Terai Arc Landscape Project Support** Support planning and encourage collaboration among stakeholders in the Terai Arc Landscape (TAL) between Nepal and India. STF representatives will participate in TAL stakeholders meetings abroad and the evaluation of projects and conservation efforts. $14,716

2001-0152-020 Wildlife Conservation Society **Reducing Use of Tiger Products in China-IV** Raise public awareness and reduce use of tiger-based products among Asian populations in order to decrease pressures on tigers in the wild. Project will target education in schools and awareness of conservation among public and government officials. $49,660

2001-0152-021 King Mahendra Trust for Nature Conservation **Chitwan Habitat Restoration-V** Continue restoration of a green corridor adjacent to buffer zone of Chitwan National Park and implement programs in conjunction with stall-feeding and alternate energy schemes to reduce human pressure on the park. $50,000

2001-0152-022 Sikhote-Alin Biosphere State Reserve **Increasing Efficiency of Anti-Poaching Teams** Increase efficiency of anti-poaching teams by replacing two vehicles, purchasing a computer to better analyze the database of the Reserve Protection Department, and purchasing a camera to enable photo-documentation and provide photographs to the media. $12,000

2001-0152-023 Phoenix Fund **Operation Amba Siberian Tiger Protection-II** Continue successful anti-poaching activities and expand the capacity of mobile anti-poaching teams and public environmental control teams in northern Primorsky and southern Khabarovsky Krais through purchasing equipment and increasing public awareness. $60,000

2001-0152-024 University of Florida **Taman Negara Field Study-IV** Analyze data and disseminate tiger density and prey abundance information. Final phase of project will investigate population distribution and abundance relative to habitat quality and train local students and government to insure future monitoring. $15,496

2001-0152-025 Wildlife Conservation Society **Bukit Barisan Tiger Conservation Program-IV** Continue to ensure long-term conservation of tigers in Sumatra by transferring monitoring responsibilities to and developing anti-poaching capacity of Indonesian officials. Project will improve their coordination and integrate planning efforts. $60,000

2001-0152-026 World Wildlife Fund **Forest Analysis in Terai Arc** Establish a baseline data-set for long-term monitoring of forest conditions and tiger prey base in the Terai Arc Landscape of India and Nepal. Project will identify areas that need immediate intervention to prevent forest degradation and fragmentation. $30,000

2001-0152-027 World Wildlife Fund **Wildlife Corridor Restoration in Terai Arc** Restore wildlife corridors in the Terai Arc Landscape, facilitating the dispersal and genetic exchange of tiger and other wildlife populations. Focus on priority sites in Nepal to create a corridor between Royal Chitwan and Royal Bardia National Parks. $50,000

2001-0152-028 King Mahendra Trust for Nature Conservation **Monitoring and Capacity-Building in Suklaphanta** Strengthen research capacity of wildlife reserve personnel to monitor tiger/prey species and biodiversity in Suklaphanta. Reduce human pressure on reserve through income-generating activities, outreach and education, and alternative energy programs. $40,000

2001-0152-029 Prakratik Society Village **Education at Ranthambhore** Establish a school at Ranthambhore National Park and develop and administer a new environmental conservation curriculum to create future generations of conservation leaders and serve as a model for schools across India. $19,300

2001-0152-030 Phoenix Fund **Tiger Response Team Improvement** Provide support and increase effectiveness of the Tiger Response Team to reduce human-tiger conflict. Capture and monitor problem animals in order to better understand behavioral patterns and experiment with ways to prevent future conflicts. $35,000

2001-0152-031 Center for Wildlife Studies **Tiger/Prey Population Dynamics in Maharashtra** Conduct a distribution survey of tiger and prey populations in Maharasthra, India. Project will provide a map of sources and sinks in tiger meta-population and will train Forest Department staff in population monitoring. $22,190

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2001-0152-032 Tarun Bharat Sangh **Tiger Conservation Education at Sariska** Launch an education program for schoolchildren from the villages surrounding Sariska Tiger Reserve in northwestern India to increase awareness and support for tiger and wildlife conservation. $20,000

2001-0152-033 Wildlife Institute of India **Terai Arc Tiger Conservation Landscape Evaluation** Assess and evaluate the habitat of the Indian side of the Terai Arc Landscape. The area will be mapped; forest conditions will be studied; habitat gaps will be identified; and prey availability, tiger signs, and threats will be identified. $53,500

2002-0301-001 Conservation International **Conserving Cambodia's Endangered Wildlife** Facilitate wildlife law enforcement in the Cardamom Mountains of southwest Cambodia by meeting critical equipment needs for enforcement staff and community wildlife monitors, which are key components of the management program. $25,000

2002-0301-002 World Wildlife Fund **Conscious Hunter for Amur Tiger Conservation** Strengthen tiger conservation efforts in Russia through the involvement of local hunting societies. Activities will include fostering interagency coordination and a mass media campaign to raise awareness of tiger conservation issues. $25,000

2002-0301-003 Phoenix Fund **CITES Operation in 2002** Conduct wildlife recovery efforts focused on strengthening anti-poaching activities of the CITES team of Inspection Tiger in central and northern Primorsky Krai and the Russia-China border. $30,000

2002-0301-004 Center for Wildlife Studies **Panna (India) Predator/ Prey Project-II** Investigate the causes for limited distribution and availability of chital and propose recommendations for increasing this vital tiger prey population, including resettlement plans for villages surrounding the Panna Tiger Reserve to reduce human impacts. $31,900

2002-0301-005 Wildlife Trust of India **Building Judicial Awareness for Tigers in India** Build support for tiger conservation in judicial and policy circles through awareness programs and the provision of technical expertise and policy support in the recently formed states of Uttaranchal and Chattisgarh in India. $20,000

2002-0301-006 Cat Action Treasury Cambodia **Community-based Monitoring-III** Continue to monitor wildlife status and spread conservation awareness in the Mondulkiri, Preah Vihear, and Cardamom Tiger Conservation Units of Cambodia and incorporate rural district police into the program to act against illegal hunting and trade. $50,000

2002-0301-007 Wildlife Conservation Society **Tiger Survey, Assessment & Conservation in Laos** Determine the status of tiger and their prey in northeastern Laos P.D.R. Project will develop wildlife management plans to accommodate tiger conservation and determine the parameters of sustainable harvest of ungulates by villagers around protected areas. $30,000

2002-0301-008 Wildlife Conservation Society **Siberian Tiger Project: Research and Action** Conduct a two-pronged effort of field research and conservation action to protect and better understand the needs of Amur tigers. Project will define tiger dispersal and deploy a tiger response team to intervene when human-tiger conflicts arise. $40,000

2002-0301-009 Wildlife Conservation Society **Long-term Monitoring of Amur Tigers in Russia-I**I Provide a comprehensive, long-term approach to monitoring the status of the Amur tiger population in the Russian Far East. Project will continue with standardized methodologies developed during the first two years of the program. $25,000

2002-0301-010 World Wildlife Fund **Tiger Conservation Enhancement in Bhutan-II** Monitor tigers throughout Bhutan and determine levels of livestock depredation while increasing public awareness through the media and Internet. Implement objectives and activities outlined in the national strategy for tiger conservation. $69,991

2002-0301-011 Sikhote-Alin Biosphere State Reserve **Organizing the Observation Point (Russia)** Build an observation point along the southern part of a highly used road within the Sikhote-Alin Biosphere State Reserve, which will enable inspectors to make observations 24 hours a day, all year round, helping to improve tiger and prey protection. $7,104

2002-0301-012 Center for Wildlife Studies **South Asia Edition of The Way of the Tiger** Publish an inexpensive edition of a tiger conservation book in order to reach a wider readership among tiger conservationists, researchers, wildlife managers, and the public in south Asia. Profits from sales will be reinvested in tiger conservation. $3,500

2002-0301-013 Minnesota Zoo Foundation **Tiger Information Center-VII** Continue the maintenance and operation of the Tiger Information Center, a comprehensive information resource on tigers and tiger conservation. The centerpiece of the project is the website. $40,000

2002-0301-014 WildAid **Building Up Wildlife's Defense** Develop a year-round wildlife ranger training program at Khao Yai National Park in Thailand for protected area staff based throughout Southeast Asia. This is the first centralized training effort of its kind and will serve as a model for future efforts. $90,000

2002-0301-015 WildAid **Bokor Conservation Project-II** Build capacity within the Ministry of the Environment and Bokor National Park in southern Cambodia. Develop a comprehensive park protection plan; lend financial and technical support; and create training courses and materials. $50,000

2002-0301-016 Lazovsky State Nature Reserve **Scent Dog Monitoring of Amur Tigers-II** Continue training scent dogs to identify and help track tigers in Lazovsky State Nature Zapovednik. Project will allow more accurate and reliable monitoring to evaluate ongoing anti-poaching efforts in a key area for tiger habitat in the Russian Far East. $15,000

2002-0301-018 Operation Eye of the Tiger **India Conservation in Corbett Tiger Reserve-III** Reduce the biotic pressures on the corridor forests of Rajaji-Corbett in India. Provide support for purchase of a new vehicle and project activities such as conservation awareness programs for local schools and incentives for local guards. $30,000

2002-0301-019 Prakratik Society **Community Conservation around Ranthambhore-IV** Continue to provide family planning and primary health care services to the local people in areas around Ranthambhore National Park to help engender support for conservation in the region. Install biogas units to reduce demand for timber from the park. $40,000

2002-0301-020 Kudremukh Wildlife Foundation **Community Tiger Conservation at Kudremukh-II** Continue to reduce human threats to tigers and their prey and habitats in Kudremukh National Park through increased local conservation leadership, improved park protection, and the development of a long-term monitoring system for tigers. $10,771

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2002-0301-021 Conservation of Wildlife and Heritage of Kodagu **Community Tiger Conservation in Nagarahole-II** Continue to support volunteer resettlement programs around Nagarahole National Park. Project will reduce human-tiger conflict by generating local support for law enforcement through community education. $29,542

2002-0301-022 Bhadra Wildlife Conservation Trust Community **Tiger Conservation in Bhadra Reserve-II** Continue to consolidate high-quality tiger habitat within and around the Bhadra Tiger Reserve by reducing human-tiger conflict through voluntary resettlement, mobilizing public support through education, and exploring possibilities of land acquisitions. $12,676

2002-0301-023 Wildlife Institute of India Prey Selection by Tigers in Sariska **Tiger Reserve** Provide support to a post-graduate student pursuing his Masters of Wildlife Science at the Wildlife Institute in India. Project will enable the student to study tiger prey availability in terms of density, prey consumption, and selectivity by tigers. $4,524

2002-0301-024 Vidharba Institute of Mountaineering & Adventure**Save the Tiger - Peoples Movement** Develop program to reduce poaching and other activities harming tiger population and habitat near Pench Tiger Reserve. Project will educate local people about tigers while promoting financial stability in local communities. $14,000

2002-0301-025 Wildlife Society of Orissa **Habitat Conservation through Community Participation** Protect tiger habitat in peripheral areas of Simlipal Tiger Reserve. Project will organize conservation activities and forest protection committees in 60 villages, educate harvesters about sensible ways to pluck sal leaves, and promote wise fuel use. $28,756

2002-0301-026 World Wildlife Fund **Strengthening Tiger Conservation in the Terai Arc** Involve local Community Forest User Groups to strengthen anti-poaching operations, increase local awareness of the effects of poaching, and gather information on illegal activities that harm tigers through poaching and habitat destruction. $44,100

2002-0301-027 World Wildlife Fund **Strengthening Forest Conservation in the Terai Arc** Develop new Community Forest User Groups where needed. Project will strengthen existing groups in two critical corridors in Terai Arc Landscape through education and capacity building. $63,250

2002-0301-028 King Mahendra Trust for Nature Conservation **Tiger Habitat Restoration in Royal Bardia Park-II** Support habitat restoration and community development efforts in buffer zone surrounding Royal Bardia National Park. Project will work with community to generate alternate income sources and fence and restore 500 hectares in community-managed forests. $75,000

2002-0301-029 Ministry of Environment, Department of Nature Conservation and Protection **Conservation in Lomphat Wildlife Sanctuary** Build capacity of protected area rangers by providing equipment and training, educating local communities about the importance of the sanctuary, and improving police and ranger patrol communication and collaboration to better enforce wildlife laws. $49,000

2002-0301-030 World Wide Fund for Nature **Indochina Central Vietnam Tiger Corridor** Develop an agro-forestry/microenterprise and environmental education program. Program will educate communities about habitat destruction and demonstrate ecologically stable business opportunities. $39,000

2002-0301-031 Zoological Society of London **Techniques to Reduce Human-Wildlife Conflict** Study wild pig populations in Sumatran oil palm plantations, in an effort to determine pig management approaches that can benefit wild tigers and reduce human-tiger conflicts. $57,000

2002-0301-032 The Tiger Foundation **Tiger Protection and Monitoring in Bukit Tigapuluh** Conduct field research monitoring tigers and develop an agro-forestry/microenterprise and environmental education program that will educate communities about habitat destruction and show them alternative ways to make a living. $64,640

2002-0301-033 Sikhote-Alin Biosphere State Reserve **Increasing Efficiency of Anti-Poaching Teams-II** Supplement ongoing anti-poaching efforts in the Sikhote-Alin Biosphere Reserve in Russia. $20,000

2002-0301-034 Phoenix Fund **Operation Amba Siberian Tiger Protection-III** Strengthen anti-poaching activities, provide ranger training, resolve human-tiger conflicts, and provide ecological education for the public and environmental investigators. $60,000

2002-0301-035 Wildlife Foundation **Environmental Education for Amur Tigers-IV** Strengthen cooperation between NGOs, scientists, journalists, and educators on environmental education efforts regarding the Amur tiger. Project will enhance awareness by distributing information about Amur tigers via film, books, and leaflets. $40,000

2002-0301-036 Center for the Protection of Wild Nature (Zov Taigi) **Hunter Outreach and Education in Russian Far East** Conduct education/media campaign to address conflict between hunters and government ban on hunting, which aims to help rebound the depleted ungulate population. Project will broadcast a documentary film and hold discussions with targeted groups. $30,000

2002-0301-037 Wildlife Conservation Society **Reducing Use of Tiger Products in China-V** Continue to reduce market demand for tiger products in China. Project includes educational materials, workshops with the Traditional Chinese Medicine community, and outreach to provinces where wild tigers remain. $40,000

2002-0301-038 World Wildlife Fund **Strengthening the U.S. Rhino and Conservation Act** Assist the U.S. Fish & Wildlife Service implement the Rhino and Tiger Conservation Act by establishing a pilot program to help law enforcement and Customs officers eliminate illegal trades of endangered species products in New York and San Francisco. $40,000

2003-0087-001 Prakratik Society **Community Conservation around Ranthambhore-V** Work with local communities near Ranthambhore National Park to provide health care, family planning, and alternative energy sources with the long-term objective of reducing pressure on the park from population growth and natural resource depletion. $45,000

2003-0087-002 Center for Wildlife Studies **Distribution & Dynamics of Tiger & Prey-Karnataka** Survey and monitor tiger and prey populations in four key areas of Karnatake, India. Monitoring will provide an evaluation of conservation projects implemented in the area, and surveying will result in detailed tiger population maps. $22,000

2003-0087-003 Kudremukh Wildlife Foundation **Community Tiger Conservation at Kudremukh-III** Protect tiger habitat by creating local conservation leadership, an information network, and a community interface involving public support activities. Project will also train State Forest field staff and monitor wildlife. $12,000

2003-0087-004 Bhadra Wildlife Conservation Trust **Community Tiger Conservation in Bhadra Reserve-III** Continue a three-year project in India monitoring tiger and prey populations that will help the State Forest Department rehabilitate habitat, increase support for the reserve, and help resettle local populations. $10,400

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2003-0087-005 Conservation of Wildlife and Heritage of Kodagu **Community Tiger Conservation in Nagarahole-III** Improve tiger habitat by creating incentive packages to motivate and support locals to voluntarily resettle outside tiger habitat, minimizing human-tiger conflict, and reducing habitat degradation. $34,960

2003-0087-006 Center for Wildlife Studies **Tiger/Prey Population Dynamics in Maharashtra-II** Monitor and evaluate the distribution of tiger and prey populations in three high-potential tiger habitats in Maharashtra, India. Data gathered will help assess the effectiveness of conservation projects implemented in the area. $31,900

2003-0087-007 Wildlife Conservation Society **Tiger and Prey Protection and Recovery in Cambodia** Establish site-based protection in southern Mondulkiri, Cambodia. Project will equip field staff to monitor tigers year-round and build six field stations at strategic sites around the core tiger area of the forest of Keo Seimaa District. $50,000

2003-0087-008 WildAid **Managing Botum Sakor National Park** Use a two-pronged approach to tiger conservation that simultaneously implements systematic enforcement patrolling and helps communities adopt new food supply methods that steer them away from hunting and logging. $50,000

2003-0087-009 Cat Action Treasury **Cambodia Community Wildlife Ranger Program** Strengthen the government's ability to enforce wildlife protection laws and monitor and manage tiger and elephant populations. Project will strengthen wildlife ranger networks and wildlife protection laws, as well as increase conservation awareness. $45,000

2003-0087-010 WildAid **Asian Conservation Awareness Program – Malaysia** Establish partnerships with a newspaper, cinema chain, and radio and television company to disseminate tiger conservation information. $32,000

2003-0087-011 Kai Kawanishi **Malay Tiger Conservation** Work with Malaysian government to analyze data in determining tiger landscape. Project will also build capacity by engaging other stakeholders to reinvigorate tiger conservation and cultivate other partners to strengthen tiger conservation. $25,000

2003-0087-012 Wildlife Conservation Society **Establishment of the Hukuang Valley Tiger Reserve** Assess the status and numbers of tigers in Hukaung Valley through camera traps and surveys. Project will also assess threats and conditions around the site. Data will be used in creating the country's first tiger reserve. $50,000

2003-0087-013 WildAid **Asian Conservation Awareness Program – Thailand** Conduct a media outreach and education campaign discouraging consumption of endangered wildlife. Campaign's message will reach rural and urban populations in Thailand via television and printed advertisements. $30,000

2003-0087-014 WildAid **Surviving Together - Stage Three** Teach rangers in Thailand, Cambodia, and Myanmar how to train other rangers in park protection and information transfer methods, creating a sustainable program. Project will also continue outreach, education, wildlife monitoring, and management efforts. $49,000

2003-0087-015 University of Minnesota **Tenasserim Range Tiger Conservation** Initiate conservation action to protect the tiger population in the Thailand/Myanmar transboundary region. Project will collect habitat information, identify priority areas, organize stakeholders, and formulate a conservation plan. $13,500

2003-0087-016 Wildlife Conservation Society **Siberian Tiger Project: Research and Action-II** Define tiger dispersal patterns and barriers to their dispersal through radio-collaring and monitoring of young tigers. Project will also deploy tiger response teams to intervene when human-tiger conflicts arise. $50,000

2003-0087-017 Wildlife Conservation Society **Long-term Monitoring of Amur Tigers in Russia-III** Establish a mechanism that assesses changes in tiger density in their range over long periods of time. Surveys of prey, tigers, and cub recruitment into the population will serve as an "early warning device" to signal inadequacies in management plans. $49,000

2003-0087-018 Lazovsky State Nature Reserve **Scent Dog Monitoring of Amur Tigers-III** Will monitor tigers in Lazovsky State Nature Zapovednik by using scent dogs that are trained to identify individual tigers by the scent in scat. The technique aims to provide a noninvasive method of monitoring tigers and evaluating anti-poaching efforts. $25,000

2003-0087-019 Minnesota Zoo Foundation **Tiger Information Center 2003** Continue operating the Tiger Information Center Web site (www.5tigers.org), which serves as a centralized database of information about the conservation of wild tigers and the Save The Tiger Fund. $40,000

2003-0087-020 Center for Coastal Environmental Conservation **Sundarban Conservation Education Package** Develop a proposal to create a Sunderbans Mangrove Convervation Education curriculum that focuses on Sundarban tiger conservation. $1,000

2003-0087-021 Wildlife Conservation Society **Russian International Tiger Conference – 2003** Host an international conference on the conservation of the Amur tiger in Russia, assessing the progress over the past decade and developing a strategy for the future. $53,320

2003-0087-022 National Fish and Wildlife Foundation **Tiger Conservation Leadership Planning Symposium** Develop and convene a task force to create a strategy for the Save The Tiger Fund's future investments in tiger conservation leadership, mentoring, training, and capacity building. $5,217

2003-0087-023 University of Minnesota **Padumpur - Social and Economic Assesment Study** and analyze issues surrounding a citizen-initiated resettlement of an enclave in Royal Chitwan National Park in Nepal. Project will assess the planning and outcome of resettlement through group discussions, surveys, wildlife monitoring. $25,000

2003-0087-024 Florida International University **Resource Use in the Western Terai Landscape, Nepal** Assess the impacts of resource use by indigenous and immigrant people on habitat corridors and connectivity across the Western Terai landscape of Nepal, and assess the effectiveness of corridors for tiger and other wildlife dispersal. $17,600

2003-0087-025 Wildlife Conservation Society Tiger **Survey, Assessment & Conservation in Lao-II** Determine the abundance and distribution of tigers and their prey, as well as the number and nature of large carnivore attacks on domestic livestock, in the northern highlands of Lao PDR. $45,000

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2003-0087-026 World Wildlife Fund **Conservation of Wild Sumatran Tigers in Indonesia** Support an informer network on tiger poaching in Indonesia through media awareness and governmental briefing activities in order to control poaching and educate local government institutions. $30,000

2003-0087-027 Fauna and Flora International **Kerinci Seblat Tiger Protection Project-III** Continue to detect, prevent, and deter tiger poaching activities in and around Kerinci National Park, Sumatra, as well as assist the park in protection of tiger habitat and prey species by maintaining two Tiger Protection and Conservation Units. $50,000

2003-0087-028 Phoenix Fund **Operation Amba Siberian Tiger Protection-IV** Support community participation and tiger protection initiatives to ensure the long-term survival of the Siberian tiger population and its prey in the Primorsky and Khabarovsky regions of the Russian Far East. $50,000

2003-0087-029 World Wildlife Fund **Revising and Updating Tiger Conservation Units** Update the Tiger Conservation Unit framework that was created in 1995 by incorporating progress made in conservation and new results from field studies across the tiger s range. $60,000

2003-0087-030 Prakratik Society **Awareness Through Literacy in Ranthambhore** Work with the community living around the Ranthambhore National Park to provide environmental education to ensure a sustainable partnership between the local people and their environment. The program will expand upon an existing educational campaign. $18,000

2004-0103-001 Wildlife Trust of India **Developing Training Aids for Field Staff in India** Develop visual aids to be used along with on-going training programs for wildlife reserve guards throughout India in order to break language barriers in remote areas. $8,000

2004-0103-002 Wildlife Institute of India **Evaluation of TAL Corridors in India** Evaluate the functional status and assess the quality of corridors in terms of facilitating movement between the fragmented populations of tigers in the Indian part of the Terai Arc Landscape. $34,000

2004-0103-006 Center for Wildlife Studies **Community Tiger Conservation-Nagarahole Education** Develop community leaders in Nagarahole National Park by providing community education, school education and by educating decision-makers and opinion builders. Raise awareness, develop resources, and enhance the capacities of volunteers/ teachers. $9,150

2004-0103-007 Center for Wildlife Studies **Tiger/Prey Population Dynamics in Maharashtra-III** Monitor and evaluate the distribution of tiger and prey populations in three high-potential tiger habitats in Maharashtra, India. Data gathered will help assess the effectiveness of conservation projects implemented in the area. $22,850

2004-0103-008 WildAid **Conservation in Lomphat Wildlife Sanctuary-II** Support protected area rangers by providing equipment and training, educating local communities about the importance of the Lomphat Wildlife Sanctuary, and improving police and ranger patrol communication and collaboration to better enforce wildlife laws. $50,000

2004-0103-009 Prakratik Society **Community Conservation around Ranthambhore-VI** Continue to work with the local communities near Ranthambhore National Park to provide family planning, with the long-term objective of reducing pressure on the Park from population growth and natural resource depletion. $23,500

2004-0103-011 World Wildlife Fund **Strengthening Activities in the Terai Arc** Engage local communities, non-governmental organization, and government workers to create new tiger habitat by restoring two critical corridors and one bottleneck forest in corridors outside the Protected Areas in the Terai Arc of Nepal. $80,000

2004-0103-012 Kae Kawanishi **Malay Tiger Conservation Program** Strengthen the leverage for partnership, on-the-ground conservation, and science in the local government for integrated tiger conservation in Malaysia. Project will provide relevant, timely, and scientifically sound information to government. $100,000

2004-0103-013 Wildlife Conservation Society **Bukit Barisan Selatan Tiger Conservation-Indonesia** Monitor habitats, populations, and enforce laws through the new CANOPI (Conservation Action and Network Program, Indonesia) framework. Project will also provide and integrate data into planning and enforcement to assist parks and local government. $50,000

2004-0103-014 Zoological Society of London **Techniques to Reduce Human-Wildlife Conflict-II** Maximize the potential of commercial landscapes in Indonesia by providing recommendations for the design of potential wildlife corridors between core protected areas. $50,000

2004-0103-015 World Wildlife Fund **Land Use Planning in Riau, Sumatra** Influence land use planning to maintain a limited production forest, as well as design materials and implementation plans that can be used as a reference for other non-governmental organization conducting campaigns to save the forest. $40,000

2004-0103-016 Minnesota Zoo Foundation **Tiger Law Enforcement Capacity Building-Indonesia** Develop a new national crime advisory group in Indonesia to support the investigation and prosecution of tiger-specific wildlife crimes. $65,000

2004-0103-017 Wildlife Conservation Society **Ecology of Amur Tigers in Primorye** Collect data in order to better understand the ecology and conservation needs of Amur tigers in the Russia/China transboundary region. Project will capture and collar five tigers and monitor them to collect data. $75,000

2004-0103-018 Lazovsky State Nature **Reserve Scent Dog Monitoring of Amur Tigers-IV** Continue to use trained dogs to identify individual tigers by scent as a means to monitor tigers in Lazovsky State Nature Zapovednik. Project will collect tiger scats and evaluate ongoing management efforts. $40,000

2004-0103-019 Sikhote-Alin Biosphere State Reserve **Improving Communication Systems in Russia** Form a system of radiotelephone communication in Sikhote-Alin Reserve. System will be used by forest guards to help deter both the misuse of natural resources and illegal poaching activity. $25,000

2004-0103-020 Wildlife Conservation Society **Long-term Monitoring of Amur Tigers in Russia-VII** Establish a mechanism that assesses changes in tiger density in their range over long periods of time. Surveys of prey, tigers, and cub recruitment into the population will serve as an "early warning device" to signal inadequacies in management plans. $45,000

2004-0103-021 Center for the Protection of Wild Nature (Zov Taigi) **Amur Tiger and Civil Sector Development** Produce the "Zov Taigi" journal and provide it to hunters and citizens in rural communities in the Russian Far East to promote knowledge and understanding about the Amur tiger and its conservation. $45,000

2004-0103-022 The Wildlife Foundation **Business Collaboration**

on Amur Tiger Conservation Lower threats to the Amur tiger in the Russian Far East by developing partnerships and cooperation with businesses. Project will increase the level of ecological responsibility of hunting businesses and their interactions with governing bodies. $50,000

2004-0103-023 Minnesota Zoo Foundation **Tiger Information Center-IX** Continue operating and updating the Tiger Information Center website, which serves as a centralized database of information about the conservation of wild tigers and the Save The Tiger Fund.$40,000

2004-0103-024 WildAid Foundation of Thailand **Asian Conservation Awareness Program - Thailand-II** Conduct a media outreach and education campaign in Thailand discouraging consumption of endangered wildlife. Campaign's message will reach rural and urban populations via television and printed advertisements. $30,000

2004-0103-025 World Wildlife Fund **Establishing Outreach in the Tennasserim Range** Train park staff to conduct enforcement and outreach activities among rural communities, in collaboration with the Thailand Department of National Parks and the Wildlife Conservation Society. $35,000

2004-0103-026 Wildlife Conservation Society **Building Foundations for Tiger Protection** Strengthen science-based conservation for protecting the Indochinese tiger in the Western Forest protected area system in Thailand. $40,000

2004-0103-027 Phoenix Fund **Tiger Conflict Resolution** Ensure peaceful co-existence of people and tigers in the Russian Far East and provide sufficient environmental knowledge for the public. $34,500

2004-0103-028 World Wildlife Fund—Bhutan C**onference on Tiger Conservation in Bhutan** Conduct an international conference on future tiger conservation activities in Bhutan and assist the Bhutanese government develop a course of action. $15,000

2004-0103-029 National Fish and Wildlife Foundation **Conference on Tiger Conservation in Bhutan** Support the Conference on Tiger Conservation in Bhutan, an international conference on future tiger conservation activities in Bhutan. $9,828

2004-0103-030 Wildlife Conservation Society **The Status of the Amur Tiger in the RFE: 2005** This census will provide the first estimate of the Amur tiger population and their prey across their entire range in the RFE since 1996. A method to assess tiger density from pugmarks will be devised and population trends will be established. $80,000

2004-0103-031 TRAFFIC East Asia **Tiger Business in the Kingdom of the Dragon** Review tiger trade in China's south east borders and create database that can be used by authorities to intervene in trade of tiger parts. TRAFFIC will collaborate with and train government and CITES officials to increase their effectiveness. $126,344

2004-0103-032 International Rhino Foundation **Rhino & Tiger Protection Units in Bukit Barisan** Protect megafaunal populations in the Bukit Barisan Ecosystem through anti-Poaching activities. This will involve patrolling each Tiger/Rhino Protection unit for at least 15 days per month, dismantling poachers traps and snares. $50,000