The Global Conservation Program

Achievements and Lessons Learned from 10 Years of Support for Threats-based Conservation at a Landscape and Seascape Scale

Conservation Landscape for Peace:

Sustaining Wildlife, and Community Livelihoods in the Southern Sudan-Northern Uganda Transboundary Landscape

WILDLIFE CONSERVATION SOCIETY

Southern Sudan-Northern Uganda Transboundary Landscape

Key Achievements, Impacts and Lessons Learned Attained with GCP Funding **2**
Southern Sudan-Northern Uganda Transboundary Landscape, Project Highlights 2
GCP Program Background **4**
Location, Global Importance and Key Threats to this Landscape **4**
Unsustainable Hunting 7
Livestock & Wildlife Conflict (Grazing, Water, Disease) 7
Unsustainable Agriculture and Encroachment 7
Lack of Information for Planning andManagement 7
Lack of Capacity 8
Lack of Integration of Conservation in Natural Resource Management Regulations and Planning 8
Transboundary Insecurity 11
The Wildlife Conservation Society's Historic and Current Roles in this Landscape **11**
GoSS Support for Protected Area Management 12
WCS's Approach to Threats-based Conservation at a Landscape Scale **12**
Administration 13
Security 13
Box: Timeline of Armed Activity in the Imatong Area *13*
Accessibility 14
Research Capacity 14
Sustainability **15**
Measures of Success **15**
Major Measures of Success 15
Value of the GCP Program **16**

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Key Achievements, Impacts and Lessons Learned Attained with GCP Funding

During the brief one year of project implementation under this grant from USAID, the Wildlife Conservation Society (WCS) and the Government of Southern Sudan (GoSS) were able to achieve several significant accomplishments under difficult field conditions.

Southern Sudan-Northern Uganda Transboundary Landscape, Project Highlights

- **Aerial and Ground Surveys and Landcover Mapping**. In 2009, an integrated survey of the Imatong Forest Massif was undertaken by WCS, in close cooperation with the Ministry of Agriculture and Forestry, the Ministry of Wildlife Conservation and Tourism and the Eastern Equatoria State authorities. The survey covered a total of 372 km, 172 km of which were covered by foot using the recce transect protocol for data collection. Surveys were stratified to represent a range of altitude zones, the ecologically most important gradient in mountainous environments. An unsupervised classification of the Imatong Massif using a SPOT satellite image from February 25, 2008 formed the basis of a preliminary landcover analysis and mapping. The landcover map was subsequently revised using field survey information. These surveys and landcover mapping yielded a strong base of knowledge which will inform future management planning.

- **Landscape Planning Process Initiated**. The Ministry of Wildlife Conservation and Tourism (MWCT), the Ministry of Agriculture and Forestry, the Ministry of Housing, Physical Planning and Environment of the Government of Southern Sudan, and the Wildlife Conservation Society convened a threats assessment workshop in August 2009 for the Kidepo, Imatong, Nimule, and Aloma areas along the border region. These participatory workshops have proved enormously useful in other WCS GCP landscapes as they bring a range of stakeholders together, often for the first time, to talk about what land uses are threatening the integrity and productivity of natural resources and jeopardizing the livelihoods of

natural resource dependent local communities. Participants included some thirty wildlife and protected areas management and forestry authorities from Nimule, Kidepo, and Imatong areas, state authorities from Eastern Equatoria and Central Equatoria, and GoSS central ministry representatives. The workshop participants identified 4 important direct threats to the transboundary landscape and an additional 11 threats that warranted some level of monitoring in case their impact increased in the future. Preliminary causal chains were developed for each key threat and priority strategies proposed to provide incentives that might help change unsustainable land and resource use practices.

- **Satellite Tracking of Transboundary Movement of Elephants**. In early August 2009, a team of Ministry and WCS experts worked in Nimule Park to locate, immobilize and collar four elephants (two adult females and two adult males) with radio/GPS/satellite tracking units. This was accomplished with the aerial support of a helicopter and WCS Cessna aircraft. This undertaking will provide valuable information on elephant movements in an important transboundary area. Data for the month of August showed that the collared animals were primarily using a relatively lush area of the Nimule Park around the Nile River, with occasional forays into neighboring Uganda. Results from Nimule will complement information already being generated by WCS and the MWCT from aerial surveys of wildlife, livestock, and land-use activity. This was the first time that animals have been collared and tracked in such a manner in Southern Sudan, and the work generated significant interest and media attention. This will help WCS's government partners highlight the importance of wildlife to the future economy of Southern Sudan, and build a broad-based national constituency for conservation.

- **Improved Law Enforcement Monitoring**. WCS and Ministry experts reviewed a range of Law Enforcement Monitoring (LEM) options to assess their potential application in Southern Sudan. As a result of this review a LEM system was designed and adopted by the MEWCT for pilot implementation in several protected areas in the region, including the Transboundary region's Kidepo Reserve and Nimule Park. As a first step in rolling out this activity, WCS and the Ministry of Wildlife Conservation and Tourism, with support from USAID, organized a Law Enforcement Monitoring (LEM) training for senior officers of the Wildlife Forces (WF) in South Sudan. Participants in the LEM training were senior officers from the MWCT Wildlife Forces, representing a broad selection of different protected areas and administrative units, each of whom will be directly involved in and responsible for the implementation of LEM in the field. These staff direct wildlife law enforcement operations and manage patrol staff in the protected areas and throughout states of the region. This initial training introduced LEM as an important tool to record, evaluate and plan wildlife law enforcement efforts and ensure the effectiveness of law enforcement personnel.

- **Support and Facilitation of Site-based Transboundary Cooperation between the Government of Southern Sudan and the Government of Uganda**. WCS helped to establish a transboundary "site-based" technical committee for each of the four transboundary protected area units and provided technical support for pilot inter-governmental cross–border surveillance activities at Nimule-Otze and Kidepo-Kidepo (including the provision of LEM field equipment). Today, at the site level, transboundary cooperation is well established, though inter-governmental cooperation challenges remain at the central committee level.

- **Creation of Audio and Video Programs to Raise Public Awareness and Support for Conservation and Natural Resource Management in the Transboundary Area and Elsewhere in Southern Sudan**. Two experts from the International Conservation Education Fund (INCEF) worked with WCS, GoSS and local partners to design and produce a film/radio series to raise awareness and support for conservation and natural resource management in the transboundary area and elsewhere in Southern Sudan. These high-quality films incorporated images from the field along with interviews from high-level GoSS and state officials, technicians, local community members and other stakeholders. They will be disseminated in local communities, state and regional capitals, in Juba and elsewhere in Southern Sudan.

GCP Program Background

The goal of the Wildlife Conservation Society's Biodiversity Conservation at the Landscape Scale (BCLS) Program is to ensure conservation of biological diversity in regions of global importance, using a landscape- (or seascape-) and species-based approach. For the past 10 years, the WCS Living Landscapes Program (LLP) has been developing and testing wildlife-focused strategies to resolve the conflicts between people and wildlife that threaten biodiversity found in these important wild places. The LLP-developed Landscape/Seascape Species Approach (LSA) is threats-based and highly participatory; it promotes conservation of landscapes (and seascapes) by focusing efforts on key animal species found within that landscape/seascape. The conservation of these Landscape Species offers a focused and cost-effective way to retain a full complement of biodiversity and overall ecological integrity.

While WCS recognizes the integral role that protected areas play within national biodiversity conservation plans, we also realize that parks and reserves are seldom sacrosanct and are always embedded in larger, human-dominated landscapes. Regardless of how large or small a protected area may be, the plants and animals it contains are often threatened by human resource use, whether directly or indirectly. Therefore, the management of parks and reserves cannot occur in isolation from the surrounding landscape; rather, management plans must take into account where and how human activities conflict with biodiversity conservation as well as where conservation activities might adversely impact human welfare. As human populations continue to expand, the incentive for over-exploiting natural resources within and outside protected areas will increase and, therefore, the need for biodiversity conservation tools that address human-wildlife conflict will become even more important. In our efforts to conserve Landscape Species that frequently move beyond protected area boundaries, we recognize that parks and reserves must be integrated into the broader landscape, a landscape in which, realistically, people will continue to exploit natural areas and wild species to meet their socio-economic needs.

The Wildlife Conservation Society's BCLS Program was designed to ensure biodiversity conservation in a selection of globally significant sites, by identifying actions to conserve Landscape Species and by increasing the capacity of local and national organizations to implement such actions. Over the course of Cooperative Agreement LAG-A-00-99-00047-00, the WCS GCPII/USAID portfolio has included 7 sites:

- **Glover's Reef Living Seascape** (Belize)
- **Greater Madidi Landscape Conservation Area** (Bolivia)
- **Ndoki-Likouala Landscape Conservation Area** (Republic of Congo)
- **Greater Yasuní-Napo Moist Forest Landscape Conservation Area** (Ecuador)
- **Maya Biosphere Reserve Living Landscape** (Guatemala)
- **The Eastern Steppe Living Landscape** (Mongolia)
- **Southern Sudan Transboundary Living Landscape** (Southern Sudan)

Location, Global Importance and Key Threats to this Landscape

Despite 25 years of civil war, Southern Sudan still possesses a tremendous ecological heritage, with one of the highest diversities of large mammals and largest intact habitats of any African country. In Southern Sudan, wildlife migrations extend across very large areas that have relatively low human population densities, making these areas particularly important for conservation. A number of globally rare and endangered species (e.g., elephants, white-eared kob, tiang, eland) exhibit large-scale seasonal movements and migrations in the region, ranging far beyond the boundaries of protected areas (see Figure 1), across community dominated zones, extractive industry concessions and international borders. Just as wildlife range through this transboundary landscape in search of resources, so, too, do local people who move seasonally to find pasture and water for their cattle and to hunt and gather; both wildlife and people move in and out of protected areas and across international borders. The location and timing of these movements is largely determined by rainfall patterns that vary over annual and decadal time frames.

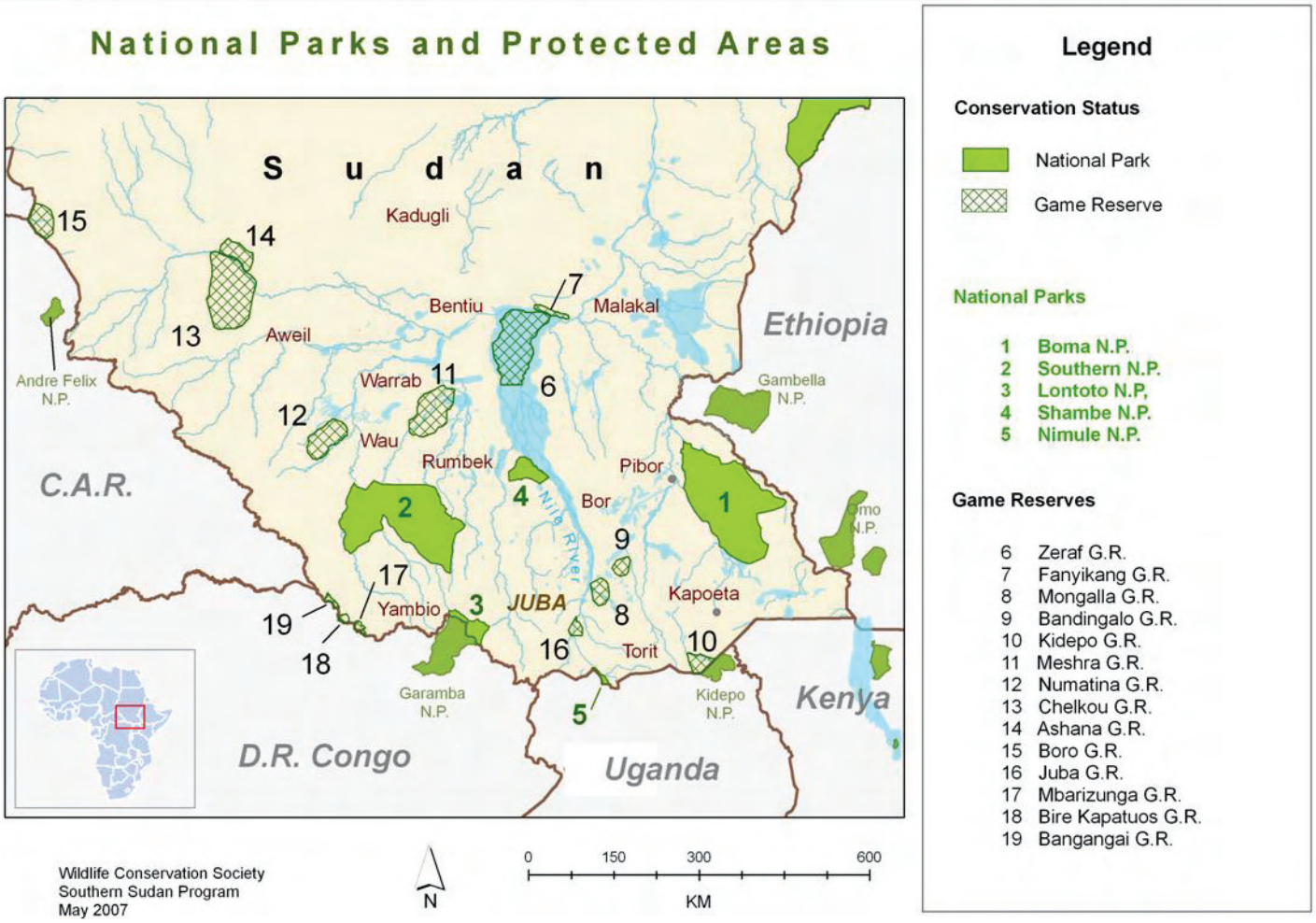

Figure 1. Protected areas of Southern Sudan and neighboring countries.

The landscapes that span the international boundary between Sudan and Uganda support a globally exceptional biodiversity. As such, they offer enormous potential as peace parks that would help protect the region's irreplaceable biodiversity and help increase security in what has been a highly volatile and dangerous region for years. Four sets of abutting protected areas and their buffer zones (Figure 2) have been identified as possible "Conservation Landscapes for Peace" and a formal Memorandum of Understanding for transboundary cooperation has been signed by the Governments of Southern Sudan and Uganda:

1. **Kidepo Landscape**: Including Kidepo Game Reserve, Didinga and Dongotona mountains in Southern Sudan and the Kidepo Valley National Park, Nyangea-Napore, Morungole, Zulia and Rom Forest Reserves and Karenga Community Wildlife Reserve in Uganda.

2. **Imatong Massif Peace Landscape**: Including the Imatong Mountains in Southern Sudan and Agoro-Agu Forest Reserve in Uganda.

3. **Otzi-Nimule Landscape**: Including Nimule National Park in Southern Sudan and Otzi and Era Forest Reserves in Uganda.

4. **Mt. Kei-Aloma Plateau Landscape**: Comprising Aloma plateau (including Ewatoka Mountain) in Southern Sudan and Mt. Kei Forest Reserve in Uganda.

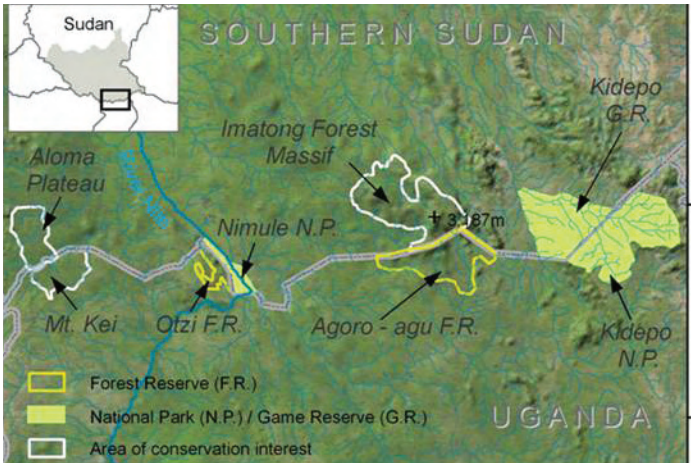

Figure 2. Priority Conservation Landscapes between Southern Sudan and Uganda.

The Southern Sudan-Northern Uganda Transboundary Landscape Project was launched to support implementation of the Memorandum of Understanding (MoU) signed between Southern Sudan and Uganda. A particular focus of the project is to ensure conservation of the Southern Sudan Transboundary Landscape's biological diversity. The project is implemented by WCS, in cooperation with the Government of Southern Sudan and other partners. The project was supported by USAID/EGAT through WCS's GCP LWA Cooperative Agreement, with additional support from the USFWS Great Ape Fund and WCS. The goal of the project was to initiate the first steps to conserve and manage a representative assemblage of the biodiversity of the Southern Sudan-Northern Uganda Transboundary Landscape, using a wildlife-, livelihood-, and peace-focused landscape approach.

The following key factors pose major threats to the conservation and sustainable management of wildlife and the forested and savanna protected areas in Southern Sudan's transboundary areas:

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Weapons are readily available

1. The civil war and continuing insecurity has seen a proliferation of firearms among the communities in the region. This has facilitated illegal indiscriminate hunting, contributing to the depletion of wildlife populations. It has also meant that conflicts over access to land and water have become appallingly violent and lethal. Just north of this transboundary region, recent clashes between pastoralist groups have left hundreds dead or wounded.
2. Lack of livelihood options for internally displaced people (IDP) and returning refugees has resulted in an overdependence on natural resources as a source of income, causing a rapid spread of unsustainable trade in bushmeat across the region.
3. The sale of endangered species such as chimpanzees as pets is a growing concern in Southern Sudan.
4. Illegal logging of indigenous species, especially mahogany (*Khaya senegalensesis* and *K. grandifolia*), is increasing but the regional impact of this illegal activity is, as yet, not well documented. Return of South Sudanese refugees has spurred logging to supply local markets for building material. This accelerated, unregulated and often illegal logging could cause serious environmental degradation and threaten the habitat of chimpanzee and other forest wildlife species in the important transboundary landscape.
5. A deterioration in the food security status due to drought has created conflicts in some local communities.
6. The historic larger conflict between the Government of Sudan (GOS) and the Sudan People's Liberation Army (SPLA), as well as the cross-border activity of the Lord's Resistance Army (LRA), resulted in displacement of many communities and exacerbated and increased the number of inter- and intra-ethnic conflicts over natural resources in various parts of South Sudan.
7. Future threats to forested areas could come from the revival of commercial farming in the region, including coffee plantations in the Aloma Plateau, palm tree plantation in the Yambio and Nzara areas, and tea and coffee plantations around the Upper Talanga, Katire and Gilo areas near the Imatong Mountains.

Proliferation of arms, conflict over natural resources, unsustainable use, environmental degradation, depletion of wildlife populations, and deterioration of food security are all inter-related and contribute to social tension and instability that could threaten the peace in large areas of rural Southern Sudan. Proper management of natural resources for sustainable use to better the lives of South Sudanese communities will help reduce conflict and allow peace to take root.

Unsustainable Hunting

As South Sudanese refugees and IDPs return, traditional rights to access natural resources are being contended, causing increasing, often lethal conflicts. The proliferation of arms allows hunters to kill more wildlife with less effort. In the context of insecure tenure, wildlife has become an open access resource and well-armed hunters are rapidly depleting even relatively abundant wildlife populations. The GoSS has recently declared a five-year moratorium on all hunting to allow wildlife populations to recover. While technically justified for many endangered wildlife species and in areas where wildlife has been depleted, a total ban will be difficult and contentious for the GoSS to implement where local communities depend on wildlife as a source of protein and income. Responsible spatial management to alleviate the present unsustainable hunting pressure, control of access to wildlife resources and protection of core conservation areas will be necessary to halt the depletion of wildlife populations and the impoverishment of local people who depend on wildlife for their livelihoods. As automatic weapon recovery programs are developed and implemented, wildlife law enforcement initiatives will need to be carefully developed with the support of local communities, military, and local authorities to stem the currently rampant over-hunting.

Livestock & Wildlife Conflict (Grazing, Water, Disease)

Livestock grazing pressure, access to water and the transmission of wildlife-livestock diseases (e.g., bovine TB, rabies, rinderpest, cooties) are important factors affecting local wildlife, livestock and human communities as well as natural resource management. These factors need to be assessed in and around the protected areas and proposed and potential conservation areas. Understanding livestock-wildlife interaction is key to designing management interventions to reduce pressures, disease transmission and conflict over contended resources. Ebola hemorrhagic fever is also a potential threat to wildlife and human health given its history of occurrence in the area; the most recent outbreak was recorded in 2004 in the Yambio region.

Unsustainable Agriculture and Encroachment

Traditionally, many of the inhabitants of Equatoria (the Eastern, Central and Western Equatoria States) were agriculturalists that practiced subsistence farming. Land use patterns have been greatly affected by conflict and population displacement in many parts of the project region. Insecurity has reduced local access to some traditionally occupied areas, and the influx of displaced South Sudanese pastoralists with their cattle is increasing land use pressures in areas not previously occupied. Given this, there is a need to assess and undertake spatial planning of agricultural development that helps minimize poor rural farmers' encroachment into intact wildlife habitat while ensuring their access to land and markets and avoiding conflicts with well-armed livestock owners.

Lack of Information for Planning and Management

Up-to-date information on human livelihoods, resource use, impact of conflict, inter-tribal conflict over natural resources, habitat status and distribution and abundance of remaining wildlife populations is needed for strategy and management plan development and the creation and redefinition of protected areas. Baseline assessments and surveys of wildlife populations and human livelihoods in existing and potential protected areas are necessary to assess conservation threats, determine conservation interventions and identify sustainable livelihood options for natural resource dependent rural families.

Assessing and building management strategies based on traditional community conservation and use systems will be key to understanding and reducing conflict over natural resources and pressures on wildlife populations. Support from constituencies for community-based wildlife management will need to be developed to control access, halt unsustainable commercial hunting, manage immigration into ecologically sensitive areas and ensure that local resources benefit local people.

As a first step towards the construction of useful management plans, and as a result of the participatory threats assessment, causal chains were created to explicitly demonstrate how the area's conservation targets are adversely affected by three identified threats (see Figure 3): over-grazing (IUCN Classification *Other Ecosystem Modifications*); wildlife poaching (*Hunting & Collecting Terrestrial Animals*); and the unsustainable use of charcoal and timber (*Logging & Wood Harvesting*). They demonstrate the interventions (in yellow) which can be implemented to help remove or reduce these threats and achieve the desired outcomes.

Lack of Capacity

The Government of South Sudan needs to build management capacity in order to be able to implement effective protection and management of the Protected Area network and to become an effective transboundary conservation partner with neighboring countries. Personnel need to be identified, trained and provided the means to put that training to work. Soldiers need to be retrained to fill gaps in GoSS environmental agency staff rosters, and mechanisms put in place to ensure that GoSS efforts on the ground are disciplined, performance-based and well-integrated with local communities. If natural resources are to be sustainably managed, livelihoods secured and peace ensconced, a robust constituency to promote the conservation of natural resources in protected areas and surrounding human-occupied landscapes must be developed among local authorities, communities and government officials. WCS has begun this process of training and capacity building in partnership with GoSS, and with the vital support of USAID.

Lack of Integration of Conservation in Natural Resource Management Regulations and Planning

Now that relative stability has returned to Southern Sudan, the region is experiencing rapidly growing interest from extractive industries such as timber, oil, and safari hunting. WCS is helping to provide the technical support desperately needed by the GoSS to develop the policies, regulatory framework and best practice guidelines for natural resource extraction that integrates long-term sustainable use, biodiversity conservation, protected area management and equitable benefit sharing with local people. WCS continues to work with the GoSS to promote policies that ensure the sustainability of community and private sector extractive use. Regulating and enforcing access to natural resources is critical to prevent unsustainable commercial hunting, meter immigration in response to commercial activities and secure access and use rights for local communities.

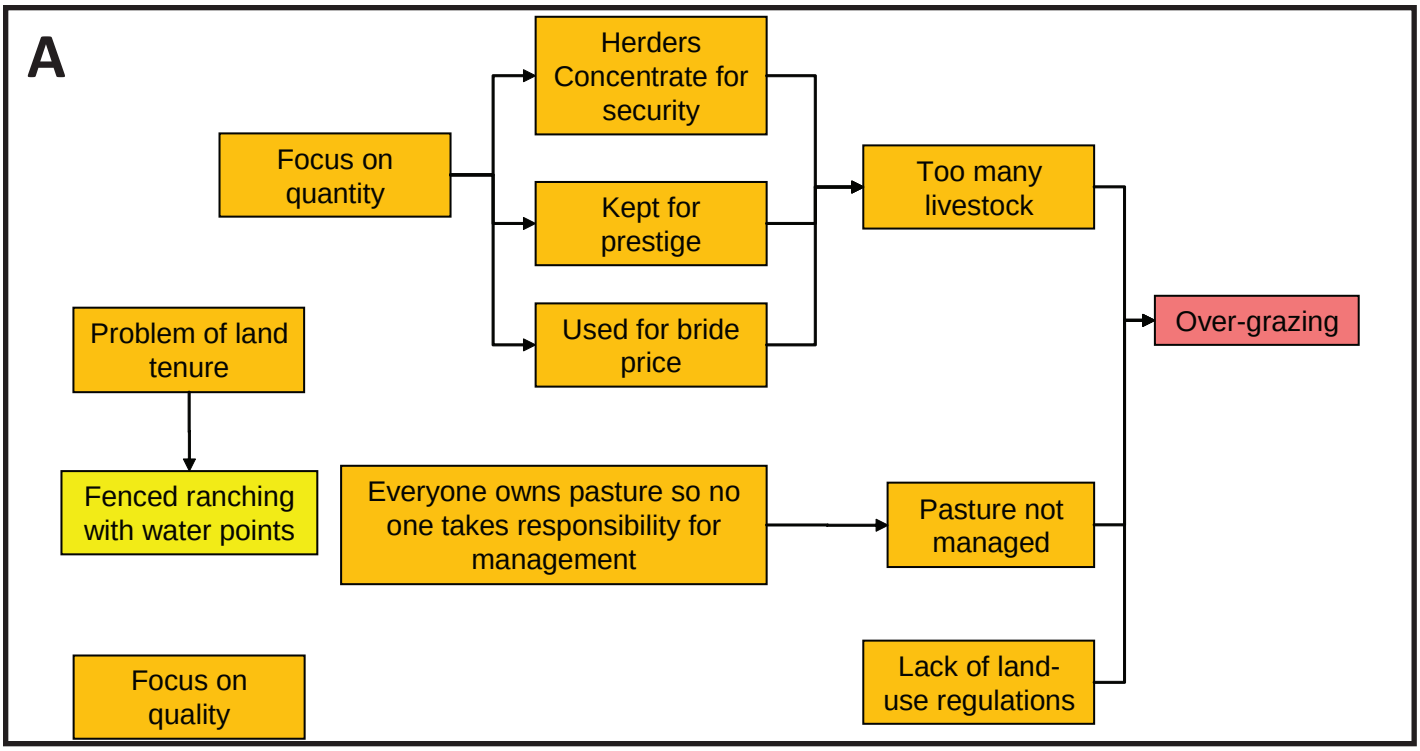
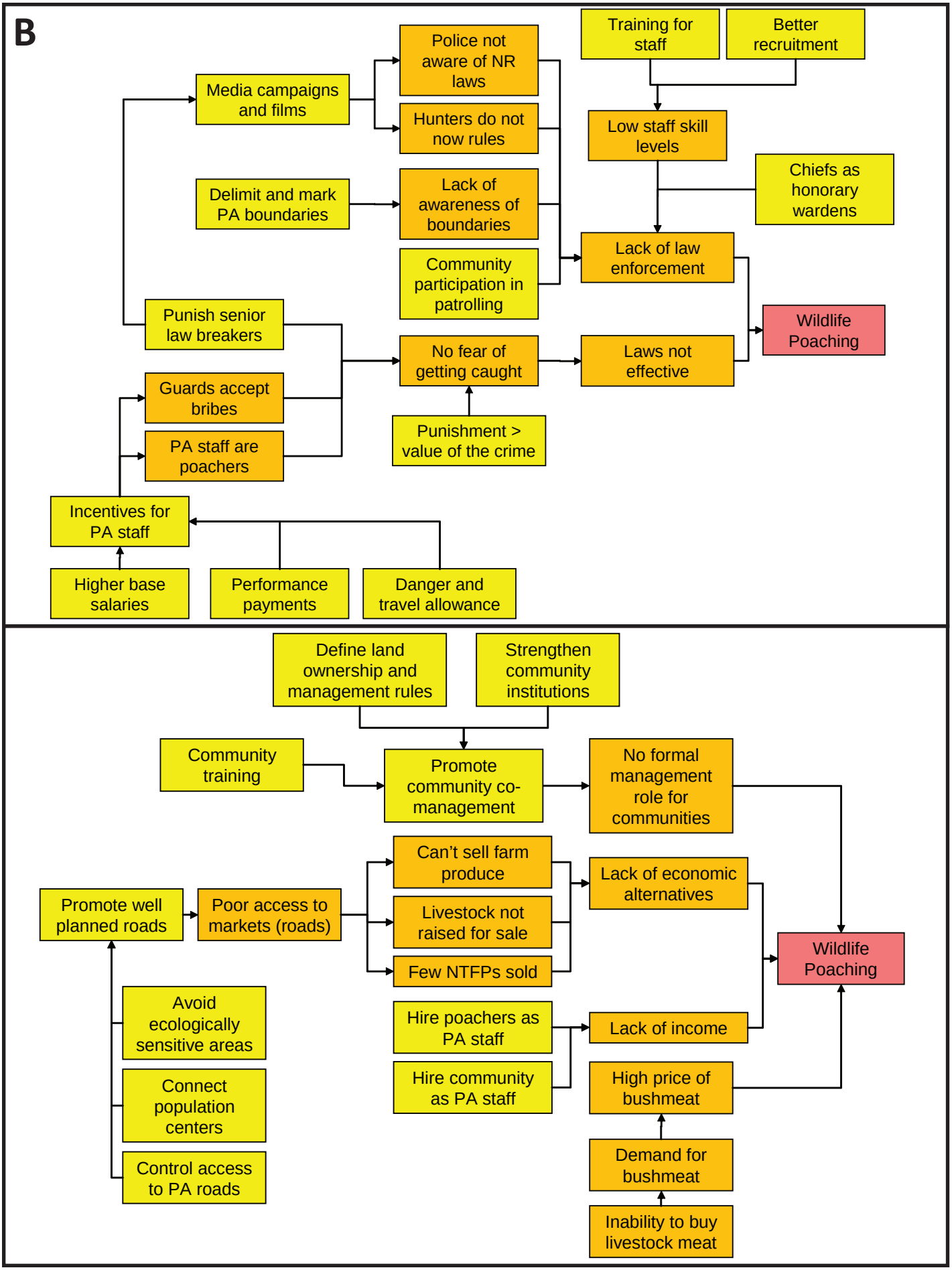
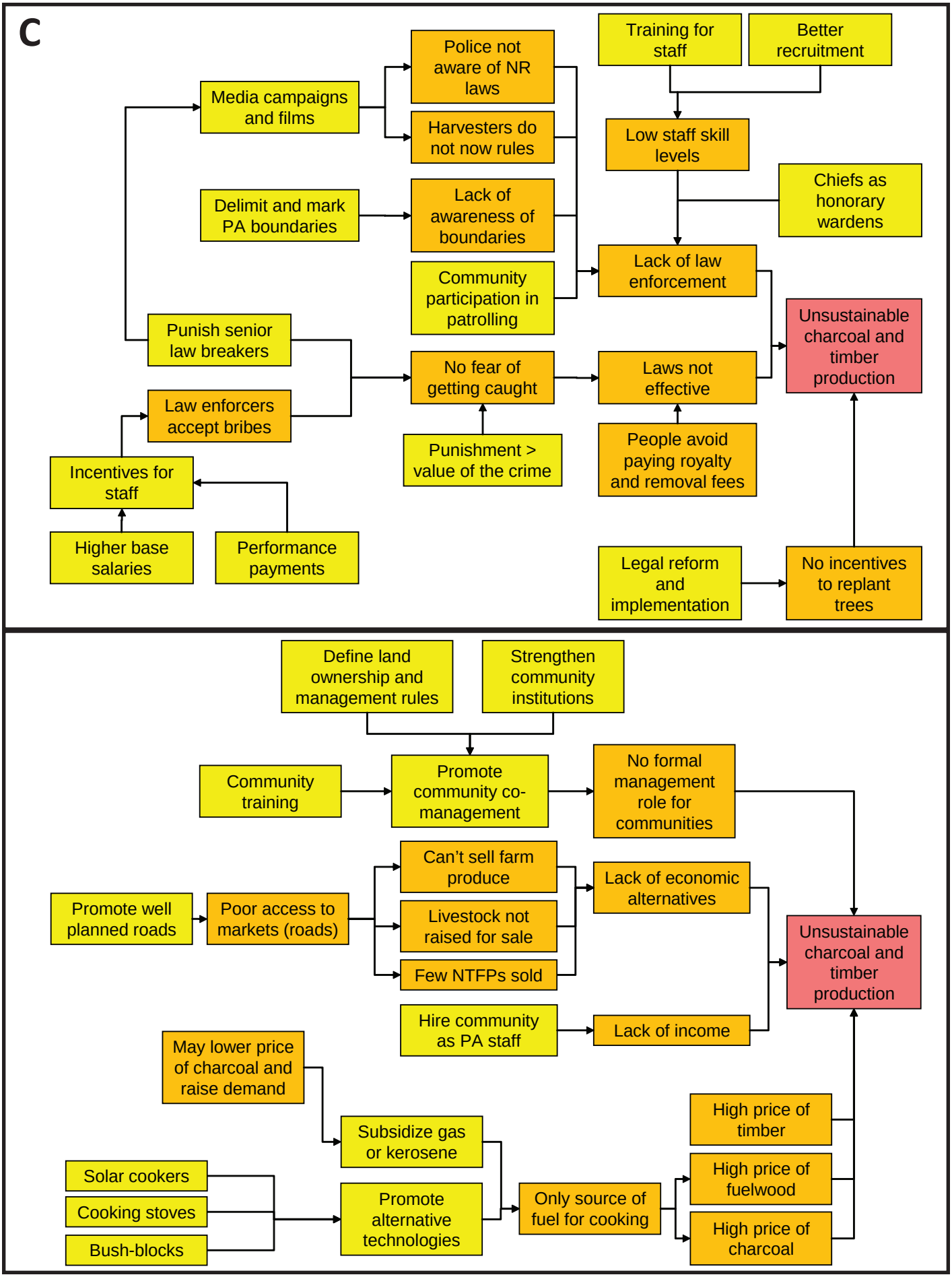


Figure 3. Causal chains for each of the major threats in this landscape: A) *Overgrazing*; B) *Wildlife Poaching*; and C) *Unsustainable Use of Charcoal and Timber*.


B
Training for staff
Better recruitment
Police not aware of NR laws
Media campaigns and films
Hunters do not now rules
Low staff skill levels
Chiefs as honorary wardens
Delimit and mark PA boundaries
Lack of awareness of boundaries
Lack of law enforcement
Community participation in patrolling
Punish senior law breakers
Wildlife Poaching
No fear of getting caught
Laws not effective
Guards accept bribes
Punishment > value of the crime
PA staff are poachers
Incentives for PA staff
Higher base salaries
Performance payments
Danger and travel allowance
Define land ownership and management rules
Strengthen community institutions
Community training
Promote community co-management
No formal management role for communities
Can't sell farm produce
Lack of economic alternatives
Promote well planned roads
Poor access to markets (roads)
Livestock not raised for sale
Wildlife Poaching
Few NTFPs sold
Avoid ecologically sensitive areas
Hire poachers as PA staff
Lack of income
Hire community as PA staff
High price of bushmeat
Connect population centers
Demand for bushmeat
Control access to PA roads
Inability to buy livestock meat


C
Training for staff
Better recruitment
Police not aware of NR laws
Media campaigns and films
Harvesters do not now rules
Low staff skill levels
Chiefs as honorary wardens
Delimit and mark PA boundaries
Lack of awareness of boundaries
Lack of law enforcement
Community participation in patrolling
Unsustainable charcoal and timber production
Punish senior law breakers
No fear of getting caught
Laws not effective
Law enforcers accept bribes
Punishment > value of the crime
People avoid paying royalty and removal fees
Incentives for staff
Higher base salaries
Performance payments
Legal reform and implementation
No incentives to replant trees
Define land ownership and management rules
Strengthen community institutions
Community training
Promote community co-management
No formal management role for communities
Can't sell farm produce
Lack of economic alternatives
Promote well planned roads
Poor access to markets (roads)
Livestock not raised for sale
Unsustainable charcoal and timber production
Few NTFPs sold
Hire community as PA staff
Lack of income
May lower price of charcoal and raise demand
High price of timber
Subsidize gas or kerosene
Solar cookers
High price of fuelwood
Cooking stoves
Promote alternative technologies
Only source of fuel for cooking
High price of charcoal
Bush-blocks

Transboundary Insecurity

Many of the most important conservation areas of Southern Sudan occur on the borders with the Republic of Uganda, Democratic Republic of Congo, Ethiopia and Kenya. Cross-boundary cooperation in the management of these areas is crucial; especially because, as road networks are repaired or extended, these areas become more exposed to transboundary poaching, illegal logging and other unsustainable activities. The presence of the Lord's Resistance Army in the cross-border areas between Southern Sudan, Uganda and DRC requires careful and concerted efforts by transboundary protected area managers with support from law enforcement and the military. Cattle-raiding and inter-tribal conflict across the borders directly impact local communities and the management of protected areas in Southern Sudan. The establishment of peace parks or cross-boundary protected areas with sound collaborative management strategies is necessary to curb cross-boundary illegal activities, conserve common resources, promote inter-governmental cooperation and secure local livelihoods.

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Black-billed weaver

The Wildlife Conservation Society's Historic and Current Roles in this Landscape

Wildlife Conservation Society was one of the principal conservation NGOs working in Southern Sudan in the 1980s. WCS (then the New York Zoological Society) supported the first investigation of the white-eared kob migration which contributed to the initiative to create the Boma National Park. WCS also worked with the Regional Government of the South at that time to promote protected area management. With the outbreak of civil war in 1983, however, WCS and the other conservation organizations working in the area suspended activities in Southern Sudan.

In 2003, WCS initiated contacts with the Southern People's Liberation Movement (SPLM) regarding the development of protected area management and wildlife conservation in post-conflict Southern Sudan. Following the signing of the Comprehensive Peace Agreement (CPA) between the North and the South, the newly created Government of Southern Sudan invited WCS to formally re-open its program to work with the new Government to assess, rehabilitate and manage its protected area network. In 2006, WCS and the GoSS developed plans for a landscape conservation initiative to manage Boma National Park and the surrounding Boma-Jonglei Landscape and to design a step-wise process for the joint undertaking of a series of priority conservation projects, including assessments of the forested existing and proposed protected areas along the borders with Uganda and DRC. In January-February 2007, WCS undertook aerial surveys of wildlife-livestock-human activity in and around the major protected areas of Southern Sudan. During this period, through its Southern Sudan and Uganda programs, WCS also worked with the GoSS and the Government of Uganda to initiate a transboundary conservation process and develop the transboundary agreement signed between Uganda and Southern Sudan.

In mid-March 2007, the Government of Southern Sudan, the Presidency of the GoSS, and the Ministry of Environment, Wildlife Conservation, and Tourism signed formal cooperation agreements with WCS for the development of a long-term strategic partnership for wildlife conservation and protected area management. Under these agreements, WCS and the GoSS agreed to work closely together on natural resource management

in Southern Sudan. This work includes a strategic plan for wildlife and protected area network management, a program for protected area management, capacity-building and land-use and resource use plans.

GoSS Support for Protected Area Management

On April 10, 2006, the President of the Government of Southern Sudan, H.E. Lt. General Salva Kiir Mayardit, declared the following in a policy statement delivered at the opening of the second session of the Southern Sudan legislative assembly in Juba:

"Our Wildlife (fauna and flora) is a national natural wealth and heritage that should be preserved, protected, propagated, managed and utilized sustainably for the present and future generations of Southern Sudan. In this regard, the newly created and expanded Ministry of Environment, Wildlife Conservation and Tourism is charged with ensuring that the environment of Southern Sudan is protected against harmful human activities, wildfires, waste deposits, water pollution and any natural hazards. It is assigned the responsibility to develop the designated parks and game reserves for the protection of endangered and rare species of our wild animals. The intention is to make Southern Sudan an environmentally friendly place for both humans and animals…"

The President went on to cite the urgent need for the development of wildlife protection efforts, development and rehabilitation of park infrastructure, education and awareness campaigns, transboundary conservation and protection of wildlife, and encouragement of the public and private sectors to invest in tourism.

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The GoSS has offered political support

On June 12, 2007, the Government of Southern Sudan and WCS announced the aerial survey results and their agreement to partner together for wildlife conservation, to international press acclaim. The President expressed his enthusiasm for the findings and the Government's commitment to work with WCS and the international community to establish and develop wildlife conservation, protected area management and sustainable natural resource management in Southern Sudan.

WCS's Approach to Threats-based Conservation at a Landscape Scale

In order to conserve biodiversity and all other ecosystem services within an area, conservationists must act at a spatial scale that matters to the species that rely on that area. To do this, it is first necessary to be explicit about what to conserve, and understand clearly the habitat needs of these species and the threats to them. The WCS-developed Landscapes Species Approach (LSA) offers a wildlife-focused method for defining the spatial extent and configuration of landscapes (or seascapes) sufficient to ensure that functional ecological relationships among species remain intact over the long-term. The LSA centers around the careful selection of a suite of Landscape Species, defined by their ability to represent all major habitats, management zones and threats at a site, their use of large, heterogeneous areas, and their structural and functional impacts on natural ecosystems. By designing conservation actions that focus on a carefully selected suite of species which rely on all primary habitats and are affected by all key threats in the area, full assemblages of native plants and animals within an area will also be protected; protecting the habitats of Landscape Species, and abating the threats that affect them, provides a conservation "canopy" that confers protection to most other plant and animal species in the landscape.

The spatially-explicit steps of the Landscape Species Approach, which address where and how much of a landscape to conserve and how to prioritize areas for action, are: 1) mapping the attainable distribution (the Biological Landscape) of each Landscape Species; 2) mapping varied human activities (Human Landscapes) and how those activities affect species; and 3) intersecting these Biological and Human Landscape maps to create the Conservation Landscape, which informs choices about conservation action.

Within the Southern Sudan-Northern Uganda Transboundary Landscape, WCS takes a threat-based, wildlife-focused approach to natural resource management that ensures that conservation strategies are designed and implemented at an ecologically appropriate scale and to explicitly address the needs and concerns of natural resource-dependent local communities. Working closely with the GoSS, transboundary authorities in Uganda and DRC and local communities is essential to advance conservation and security within this volatile region that is coming out of years of violent conflict. During the brief 12 months that this program was undertaken, many challenges to effective implementation were faced, including the following.

Administration

In December 2008, suspension of the Undersecretary and Director General of the Ministry of Wildlife Conservation and Tourism of the Government of Southern Sudan (GoSS) created confusion and a leadership void in the Ministry. This significantly delayed organization of the international transboundary meeting between the Sudan and Uganda partners to be held in Juba. In May 2009, Lt. General Fraser Tong was named as acting Director General and, subsequently (in August 2009), as Undersecretary. WCS worked with Lt. General Tong to hold the Transboundary meeting with Uganda in July/August in Juba. The Ministry sent letters of invitation to the Government of Uganda and contacts were made with WCS Uganda. Unfortunately, despite these official efforts, the Government of Uganda did not respond to the invitation letter nor to direct contacts by WCS Uganda and, therefore, the meeting could not be held.

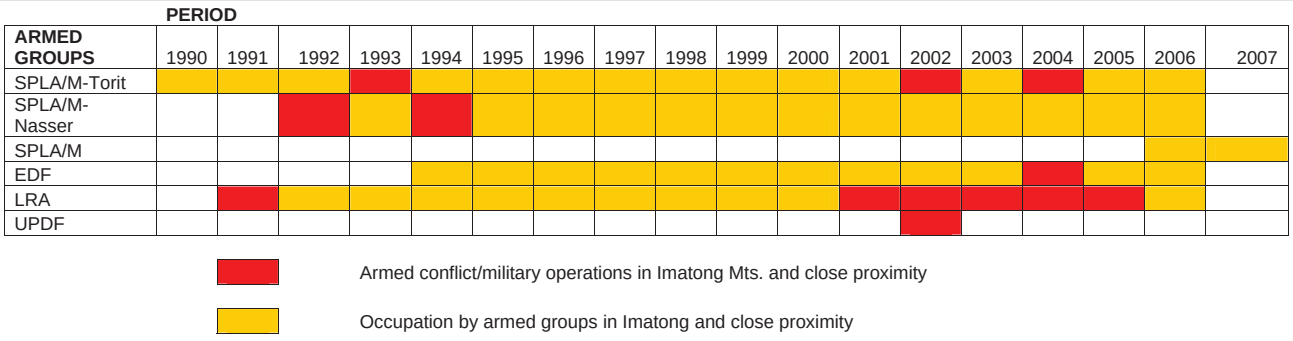
The GoSS and WCS decided instead to proceed with a technical "threats assessment" workshop for Southern Sudan-based partners including the Ministry of Agriculture and Forestry, Ministry of Wildlife Conservation and Tourism, Directorate of the Environment, state authorities and WCS representatives. It should be noted that, although the regional technical coordination meeting was not able to be held, three site-based transboundary meetings (two for Nimule-Otze and one for Kidepo-Kidepo) involving protected area managers and local authorities were held during this period. These meetings revealed that cattle raiding in the Kidepo region remains a tremendous threat to the local security of both protected areas.

Security

While Southern Sudan as a region has enjoyed increasing stability and security following the signing of the Comprehensive Peace Agreement in 2005, some regions along its southern borders have been affected by lawlessness and foreign armed rebel groups operating on Southern Sudan territory. Nearly the entire forested area along Southern Sudan's border with northern Uganda, DRC, and CAR has been affected by insecurity at various times in the recent past, severely limiting WCS's ability to enter these regions and conduct the required ecological and socio-economic surveys.

The Imatong Mountain and surrounding areas have a long history of instability, linked to the Lord's Resistance Army (LRA) insurgence against the Government of Uganda (a timeline describing the various factions and major armed activity in the Imatong area is provided in the Box, below). In late 2008, a joint Uganda-DRC-Southern Sudan offensive was launched to destroy the

Box: Timeline of Armed Activity in the Imatong Area



LRA at their base in northern Garamba National Park in DRC. This offensive resulted in the LRA breaking into many smaller groups scattered along the border and deeper into Southern Sudan. Throughout 2008 and early 2009, the Southern Sudan-DRC border area stretching west of the Nile up to CAR was listed as insecure by the UN; therefore, WCS was unable to undertake terrestrial surveys of large mammals in the Aloma plateau area bordering Uganda. Survey effort was instead refocused on the Imatong forest area, to which the LRA had not returned since leaving in 2006.

Accessibility

Roads in Southern Sudan are in a very poor state throughout the region. Much of the regional soil is vertisol which is high in montmorillonite clay. These black cotton soils absorb water, making travel in the rainy season nearly impossible. As a result, many areas are only accessible by air, and the villages of Labone and Ikotos are only accessible during the 6 months of the dry season. Furthermore, because the bridge across the Kinyeti, a major obstacle on the way to Katire, was destroyed during the civil war, the road leading from Torit into the central ranges of the Imatongs was blocked until the bridge was rebuilt in late 2008. As a result, terrestrial field surveys could only be undertaken in the late dry season from March to early May in 2009.

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Accessibility is a constant issue

Research Capacity

While it is not surprising that very little ecological and socio-economic fieldwork was undertaken during the last 25 years of civil unrest in Southern Sudan, this unfortunately means that today in Southern Sudan there are very few people with the skills and experience needed to conduct extensive and demanding research in the field. Many of the government staff have been far removed from field-based work and have little or no understanding of the kind of efforts, motivation and commitment needed for such field research. WCS has been working on identifying Sudanese staff and has put much time and resources in the training of potential field staff. This process requires time, from recruitment to training and mentoring, and continued support. A long-term commitment is necessary, and after a number of disappointments with recruits, a core team has been established and is gaining skills and actual field experience. It is gratifying to see these ever-capable staff members developing into research team leaders.

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Newly trained researchers are able to study the wildlife of Southern Sudan, including this bat

Sustainability

Evidence from the United States, Australia, Europe and India clearly shows that when parks and reserves have popular support, governments find the means to finance them and ensure that they are properly managed. As a result, there are three essential building blocks for sustained biodiversity conservation. The first and most important is a broad-based, local to international constituency for the conservation of the site. With local, national and international support for a site, constituents are typically unwilling to let conservation fail and lobby hard for the necessary resources to ensure effective management. The second is a set of agencies and individuals with the technical and administrative skills necessary to design, implement and adapt management – ensuring sound conservation. The third is a diversified financing portfolio that helps reduce the boom-bust funding that is often an unfortunate consequence of donor project cycles. The WCS Southern Sudan Program addresses these issues by working closely with local, national and international actors in the public, private and civil society sectors to build trusting relationships, grow a broad-based constituency for conservation, strengthen the capacity for effective management and establish a range of funding sources.

As long as valued resources are being degraded or lost to unsustainable use, active management will be necessary to work towards the conservation of biodiversity and the sustainable production of natural resources. Because of this, WCS takes a long-term view when committing to the conservation of any landscape or seascape. Few, if any, national parks or reserves generate sufficient revenues from visitor fees to cover the costs of management. Most rely on national political will to invest tax revenues to support the costs of protected areas, in addition to funds raised by civil society. WCS works at local, national and international levels to build constituencies for conservation that play key roles in mobilizing support and securing the funds needed to manage protected areas over the long term.

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The Imatong Ranges

Measures of Success

Funding was made available by USAID to support the activities described herein from October 2008 to September 2009. While this window was very short, a great deal was accomplished under difficult, and sometimes dangerous, field conditions in Southern Sudan.

Major Measures of Success

The following outputs are clear, concrete indicators of conservation progress made in the Southern Sudan-Northern Uganda Transboundary Landscape:

- Completion of aerial surveys of wildlife, livestock and human activity in and around the existing and proposed protected areas of Southern Sudan.
- Threats assessment and mapping as a result of a cooperative planning workshop.
- Collaring of elephants and other species for GPS/Satellite tracking (which resulted in a press release and Reuters article).
- Creation of public awareness-raising films/radio to raise awareness and support for conservation and natural resource management in the transboundary area, and elsewhere in Southern Sudan.

While all objectives set out for the program were advanced, a few key activities which would have further added to the outcome of the program were unable to be completed. One such activity was the questionnaire survey, scheduled to be conducted in conjunction with the terrestrial surveys, that was meant to complement the terrestrial and aerial surveys by providing information on community-based trade and natural resource use. Information was to be collected on resource and tenure conflicts through this questionnaire survey. One week before the survey was scheduled to begin, the team leader decided to accept a high-level position in

the Ministry of Water Resources of the Government of Southern Sudan and was therefore not available to undertake the work. Although the terrestrial survey team moved ahead with the ecological surveys and was able to accomplish their work before the heavy rains, time did not allow for the recruitment and training of another team leader to undertake the questionnaire survey portion of the work before the heavy rains began. Since the questionnaire work could not be undertaken, WCS was unfortunately unable to collect information on conflict in the area through interview surveys. However, anecdotal information on the history of armed groups in the region was gathered through discussions with local authorities and review of UN databases. Additionally, the site-based transboundary meetings generated information about conflicts at those particular sites, and the issue of conflict was also discussed during the threats assessment workshop.

Value of the GCP Program

USAID's GCP funding was critical to enabling WCS staff and partners in the Southern Sudan-Northern Uganda Transboundary Landscape to begin to develop the trusting on-the-ground relationships and collaborative organizational mechanisms needed to effect conservation and sustainable land use in this important transboundary area. With USAID support, WCS was able to increase park staff presence in the field on both sides of the border, helping to discourage lawlessness, bringing a semblance of peace and increased sense of security to local families. In an area that has suffered unrelenting conflict for over a generation, this is an outcome of enormous importance, because peace brings opportunities to secure local livelihoods and conserve the natural resources on which local lives depend. USAID support helped WCS to raise the profile of the environment within the GoSS and to continue the process of building a robust and broad-based national constituency for sustainable environmental management. The landscape-scale focus of the Global Conservation Program helped senior decision makers in the GoSS to better understand that protected areas are essential but not sufficient, and that sustainable natural resource management needs to extend out of these protected areas and across much larger, human-occupied landscapes. In this way, a landscape-scale perspective has helped the GoSS protected area authority see the importance of meaningfully engaging with private sector and local community land users outside of protected areas. GCP support also helped convince GoSS that investment in sustainable resource management is an effective pathway to reducing natural resource use conflicts, which in turn bolsters peace and helps prevent clashes that could escalate and foment a resurgence of war.

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