Biodiversity Conservation at the Landscape Scale

A Program of the Wildlife Conservation Society
Supported by the USAID/Global Conservation Program

The Maya Biosphere Landscape Conservation Area, Guatemala

Implementation Plan FY 2008
October 1, 2008 – September 30, 2009

Living Landscapes Program- Guatemala/Maya Biosphere Reserve
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Program Goal

To ensure conservation of biological diversity in regions of global biodiversity importance, using a species-based landscape approach.

The Wildlife Conservation Society believes that protected areas must remain at the core of all nations' biodiversity conservation plans. These areas typically contain a higher diversity and abundance of plants and animals than landscapes managed primarily for economic use. Yet parks and reserves are always embedded in larger, human-dominated landscapes and are seldom sacrosanct. Regardless of how large or small a protected area may be, the plants and animals it contains are often threatened, directly or indirectly, by human resource use activities.

Management of parks and reserves cannot, therefore, occur in isolation from the surrounding human-dominated landscape, but must take into account where and how human activities conflict with biodiversity conservation, and where conservation adversely impacts human welfare. As human populations continue to expand over the next 50 years, the incentive for over-exploiting natural resources within and outside of protected areas will likely increase and, therefore, the need for biodiversity conservation tools that address human-wildlife conflict will become even more important.

The Living Landscape Program promotes conservation of landscapes by focusing efforts on key animal species that require large areas for their conservation, that are particularly at risk because they cross land use and jurisdictional borders, and that, when protected, will have the greatest positive impact on biodiversity as a whole. These Landscape Species are highly mobile, vulnerable animal species, and their conservation fosters a focused and cost-effective way to retain a full complement of biodiversity and overall ecological integrity. To conserve these species, parks and reserves must be integrated into the broader landscape, a landscape in which people exploit natural areas and wild species to meet their socio-economic needs.

The Biodiversity Conservation at the Landscape Scale Program (BCLS) is designed to ensure biodiversity conservation in five core sites by identifying actions to conserve Landscape Species, and by increasing the capacity of local and national organizations to implement such actions. The five areas of global biodiversity importance for WCS involvement and USAID activity are:

- Northwestern Bolivian Andes Landscape Conservation Area (Bolivia)
- Glover's Reef Living Seascape (Belize)
- Maya Biosphere Reserve Living Landscape (Guatemala)
- The Eastern Steppe Living Landscape (Mongolia)
- South Sudan Transboundary Landscape (South Sudan)

Maya Biosphere Living Landscape Project Strategy

At 2,112,940 hectares, the Maya Biosphere Reserve is the largest protected area complex in Central America. Its subtropical moist forest, savannah, and wetlands account for more than one-seventh of the surface area of Guatemala and form the core of a tri-national system of protected areas in Guatemala, Belize, and Mexico. It is a reservoir for Central American biodiversity, and has been internationally recognized as a priority Hotspot, Last Wild Place, and World Heritage Site. The Reserve hosts one of the world's highest concentrations of endemic species, and retains an intact suite of wide-ranging mammal and bird species extirpated in many parts of Mesoamerica. Furthermore, beneath the canopy of this subtropical moist forest lies the epicenter of the ancient Maya civilization. The Maya Biosphere Reserve (MBR) was established in 1990 to conserve these biological and cultural wonders while improving the livelihoods of local inhabitants. As a consequence of the great extent of intact forest, wide-ranging species extirpated in many parts of Central America such as the jaguar, puma, white-lipped peccary, Baird's tapir, and scarlet macaw have been maintained. The Maya Biosphere Reserve also supports one of the highest levels of endemism worldwide; in the lowland Maya Forest, endemism varies between groups, ranging from 3.8% of bird species to 28.9% of amphibian species. Comparing these levels with those of the top 25 priority Hotspots designated by Conservation International (Meyers et al. 2000[1]), it is evident that the Maya Forest is of high global importance as a center of endemism. Nevertheless, threats are numerous and range from direct threats such as illegal hunting, forest fires, and habitat degradation to more indirect forces such as governmental instability, poverty, and human population increase both within Guatemala and across the region.

The Wildlife Conservation Society began supporting conservation in Guatemala in the 1980s by funding the field investigations of Guatemalan biologists who later played key roles in the first decade of the management of the Maya Biosphere Reserve. In 1991, WCS initiated studies to determine the status of wildlife hunted for subsistence in Tikal National Park and the forests of the village of Uaxactún. By 1998, this project evolved to support the management of Uaxactún in collaboration with OMYC, SC (Organización Manejo Y Conservación, Sociedad Civil), Uaxactún's community institution responsible for the management of the 83,558 ha concession. In 2001, WCS supported the establishment of Asociación Balam, a national NGO dedicated to the conservation of the natural and cultural resources of the Maya Biosphere Reserve. Balam is currently seeking the co-administration of Mirador-Rio Azul National Park in the northeast corner of the reserve. In 2002, WCS began monitoring the biological integrity of the MBR with support from USAID-Guatemala. In September 2004, biological monitoring activities funded by USAID-Guatemala ended and, in June 2005, WCS Guatemala released a final report on CD, evaluating the integrity of landscape processes, the impacts of multiple-use zone management, and the efficacy of park protection. Specific activities covered in the report include: remote sensing to monitor changes in forest cover and fire, assessing scarlet macaw (*Ara macao*) population distribution and nesting success, investigating the impacts of timber extraction on biodiversity, evaluating the sustainability of xate palm (*Chamaedorea* spp.) frond extraction, evaluating the effectiveness of park protection in Sierra Lacandon NO National Park, and rapid ecological assessment of the Rio Azul watershed. In 2004, biological monitoring activities were expanded to include a collaborative effort with CONAP (Consejo Nacional de Áreas Protegidas) and the Critical Ecosystem Partnership Fund to protect critical nesting sites of scarlet macaws located within Laguna del Tigre National Park. WCS efforts in Guatemala are supported by cooperative agreements with both CONAP and IDAEH (Instituto de Antropología E Historia), and WCS has fostered much collaboration with other organizations working in the MBR. Collaborators in the myriad WCS activities in the MBR include: CONAP, IDAEH, INGUAT, OMYC/Uaxactún, ACOFOP (Asociación de Comunidades Forestales de Petén), LightHawk, National Wild Turkey Federation, Proyecto Pavo, Asociación Balam, Defensores de la Naturaleza, Tikal National Park, Parkswatch, Tropico Verde, the village of Paso Caballos, the village of Carmelita, Baren Industrial Ltd., The Consensus Building Institute, Mesa Multisectorial para el Area Natural y Cultural de Mirador-Rio Azul, and Rainforest Alliance, among others.

MBLLP activities from the first year of GCP funding (FY04) were designed to incorporate the Landscape Species Approach (LSA) into local conservation strategies while building upon the foundations of three WCS programs in the eastern section of the Maya Biosphere Reserve (MBR). Second year MBLLP activities focused to a large extent on those areas deemed most critical by the results of biological monitoring activities, specifically the scarlet macaw

[1] Myers, N., Mittermeier, R.A., Mittermeier, C.G., da Fonseca, G.A.B., & Kent, J. 2000. Biodiversity hotspots for conservation priorities. Nature 403: 853-858.

nesting areas in eastern Laguna del Tigre. Yet the project also proceeded with the development of landscape models and in defining methodologies to permit species sampling. Third year activities built on the progress of the first two years, permitting the continued conservation of the eastern Laguna del Tigre scarlet macaw nesting areas, as well as pilot sampling of target species across the priority landscape. Fourth year activities yielded important advances towards consolidating pilot conservation interventions, including efforts to conserve eastern Laguna del Tigre macaw nesting areas, institutional alliances aimed at strengthening the Multiple Use Zone forest concessions, and road checkpoints designed to control open access to key sections of the reserve. We also made important advances in sampling and modeling the distributions of scarlet macaws, jaguar (*Panthera onca*), and Central American river turtle (*Dermatemys mawii*). The sixth-year activities proposed herein consist of the most urgent conservation interventions the MBLLP project can implement in order to have the greatest conservation impact in this final year of full GCPII funding. This year, we will focus activities on continued consolidation of participatory initiatives to conserve scarlet macaw nesting areas, strengthen the management of the MBR's Multiple Use Zone, and continue generating and disseminating data on biological indicators including scarlet macaws, jaguar, forest cover, xate palms, and fire.

The Maya Biosphere Reserve Living Landscape Strategy

The overall goal of the BCLS program in the Maya Biosphere Reserve is to conserve wildlife species and their habitat, while maintaining the economic productivity of renewable natural resources. To ensure conservation of the MBR's biological diversity, the BCLS program focuses on three interrelated objectives, and a fourth objective which is the responsibility of the New York Coordination Unit:

1. Develop an adaptive and participatory strategy to reduce threats to wildlife in the MBR.
2. Develop, implement and monitor sustainable mechanisms to reduce threats to wildlife and ecosystems across the MBR landscape.
3. Learn and teach best practices for conservation of the MBR landscape and beyond.
4. Guide the design and testing of wildlife-focused planning.

Nine threats were previously identified as major sources of stress on the biological integrity of the Maya Biosphere Reserve, these include: hunting; market demand for wildlife; timber extraction and associated activities; theft of macaw fledglings from nests; unsustainable xate palm frond extraction; forest conversion; forest fires; uncontrolled human access; and lack of information at the local level. As demonstrated by the evolution of our work thus far, monitoring the reserve and requesting continuous feedback from partners will allow interventions to be reformulated when threats change in severity or when new threats emerge.

In FY09, Maya Biosphere Living Landscape Project (MBLLP) investments will focus on interventions that have demonstrated the greatest potential for impact while laying the foundation for future consolidation of our major interventions thus far. Although obtaining adequate funding for future field activities and interventions is likely to remain a challenge, one partial solution to this has been our cultivation of broad alliances, via participatory engagement in the numerous interventions we have undertaken. Sixth year project areas will include El Peru-El Burral-La Corona-La Cariba-Peñon de Buena Vista; community forest concessions including Uaxactún, Asociación Forestal Integral San Andrés Petén (AFISAP), and La Colorada; the Q'eqchí Maya village of Paso Caballos; and the Rio Azul section of Mirador-Rio Azul National Park. Interventions will continue to address all the key threats previously identified, monitoring of deforestation and fire will continue as in previous years, and biological monitoring efforts will be focused on monitoring the abundance and distribution of scarlet macaw nests in key nesting sites already identified by the project. The decision to focus on macaws was made because the species is a superb umbrella and a flagship for conservation of the eastern Laguna del Tigre area, and also because it is by far the most threatened Landscape Species within our focal area. As during the past year, other biological investigations (including species abundance and distribution sampling to evaluate the precision of biological models) will be carried out as additional funds become available.

Total Anticipated Level of Effort in FY09
Maya Biosphere Living Landscape: $257,946 (USAID/EGAT $112,107; WCS Guatemala $26,000; WCS Jaguar Conservation Program $5,000, WCS/NY: $15,000; Asociación Balam: $6,000; LightHawk: $10,000; Rainforest Alliance: $10,000, Plant Family Foundation $20,000, Romano Pizzeria (Rossell): $6,667; Panthera Foundation: $13,333; TNC: $24,846; BBC: $8,993).

IMPLEMENTATION PLAN: FY09

OBJECTIVE 1: Develop an adaptive and participatory strategy to address threats to wildlife in the Maya Biosphere Landscape

The MBLLP will continue to involve local people and Guatemalan institutions in all our conservation activities as the most effective way to reduce the significant levels of threat throughout the Maya Biosphere Reserve. The foci of our conservation activities will continue to be the conservation of priority Landscape Species and the conservation of the reserve's natural resources that are crucial to local economies. Maintaining (and increasing) local participation in all conservation activities will continue to be one of the central tenets of all MBLLP activities. To that end, we will continue to involve local NGOs, government agencies and Guatemalan university students in field investigations, and work to ensure greater involvement and adoption of project objectives by neighboring rural community members whose livelihoods are linked to the sustainable management of the reserve. As in previous years, "participation" will consist of consultations and evaluations with community members and institutions that represent community interests. In some cases, feedback from local communities and other national stakeholders may require us to modify work plans (adaptively manage) to ensure social support for conservation initiatives. In other cases, "participation" will include full involvement in the design and implementation of an activity or set of norms, or even adoption of some shared financial responsibilities for the sustainability of projects, where possible. As in past years, we will strive for synergy with governmental institutions with legal mandates for the areas where we work.

Level of Effort (Total Objective 1): $32,500 (USAID/EGAT: $10,500; WCS: $2,000, Plant Foundation: $20,000)

Activity 1.1 Complete a final updated and participatory strategy for the conservation of macaws

Due the importance of developing an integrated scarlet macaw conservation strategy, in 2008 we organized a workshop to discuss the scarlet macaw population reinforcement protocol and to evaluate different management activities under the scope of population recovery in the near future. Because the aim of the workshop was to develop a participatory strategy, invited attendees included local, national and international partners with expertise in psittacine research, veterinary science and conservation. A draft of the strategy was presented and the key field activities were discussed. Each day of the workshop we chose different sections of the strategy for discussion and evaluation, and activities were prioritized at the end of the week.

Key activities and their methodology:
Evolution of the Species Recovery Plan (SRP) for the Scarlet Macaw in Guatemala will continue as we work with our partners to produce a final version that will be presented in a public forum. Local staff responsible for this activity include: Roan Balas McNab, Rony García and Gabriela Ponce.

Results/outputs:
The Final Macaw Conservation Strategy, the "Species Recovery Plan for the Scarlet Macaw in the Maya Biosphere Reserve", will be presented to CONAP and other partners in FY2009.

Threats addressed:
Market demand for wildlife; timber extraction and associated activities; theft of macaw fledglings from nests; forest conversion; forest fires; uncontrolled human access; and lack of information at the local level.

Level of Effort (Total Activity 1.1): $7,000 (USAID/EGAT: $6,000; WCS: $1,000).

Activity 1.2 Produce final Conservation Landscapes for Landscape Species

Conservation Landscapes for jaguar, scarlet macaw, Central American river turtle, white lipped peccary, Baird´s tapir and Morelett crocodile will continue to be developed and supported with additional data from the field and from published and gray literature. Population targets, biological models/abundances (Biological Landscapes), human models/reductions in abundances (Human Landscapes) and Conservation Landscapes will be finalized for three of the six target species. Preliminary Conservation Landscapes will be completed for two of the remaining three Landscape Species

Key activities and their methodology:
A final report on the Conservation Landscapes for our target species will be presented to CONAP Guatemala, other partners and the interested public in events to occur before November 2008. All the products generated will be compiled and distributed via CD to interested individuals and organizations. Local staff responsible for this activity include: Víctor Hugo Ramos and Rony Garcia, with the collaboration of personnel from CEMEC.

Results/outputs:
Outputs will include final Conservation Landscapes for scarlet macaw, jaguar, and Central American river turtle, as well as preliminary Conservation Landscapes for Baird's tapir, Morelett crocodile, and white-lipped peccary. A CD will be produced and distributed at the end of the fiscal year. We expect the final result of this activity will be a greater awareness of the Living Landscape methodology among project members, local conservation actors, and conservation staff across Guatemala, as well as a significant improvement in our ability to target conservation spending transparently and strategically.

Threats addressed:
Hunting; timber extraction and associated activities; theft of macaw fledglings from nests; forest conversion; forest fires; uncontrolled human access; and lack of information at the local level.

Level of Effort (Total Activity 1.2): $5,000 (USAID/EGAT: $4,000; WCS: $1,000)

Activity 1.3 Consolidate an institutional partnership to promote biodiversity conservation and protection within the Multiple Use Zone of the Maya Biosphere

As in previous years, cooperative action in FY08 continued to yield stellar advances within this activity, continuing the momentum generated by the cooperative agreement signed in 2006 between WCS Guatemala, Asociación Balam[2], and ACOFOP (Asociación de Comunidades Forestales de Petén). This collaboration enabled us to secure a $2.5M grant from the UK's Department for International Development (DFID) for a project entitled "Strengthening Emerging Local Governance Capacity to Conserve Natural and Cultural Resources and Secure Livelihoods in the Petén, Guatemala", a highlight of the partnership. The alliance between WCS and ACOFOP, CONAP, and Asociación Balam continued coordinating and administering donations provided by the Plant Family Foundation to strengthen community-based fire prevention and protection activities in nine community management units within the Maya Biosphere Reserve. Asociación Balam's leadership of the Mesa Multisectorial for the Mirador-Rio Azul Natural and Cultural Area provided the necessary forum to consistently focus governmental and private sector attention on the urgent need for improved protection of the Multiple Use Zone, especially in the area known as the "Ruta Carmelita". Over the last year WCS, CONAP, and The Nature Conservancy joined forces to establish the Biological Monitoring Roundtable ("Mesa de Monitoreo Biológico") for the reserve. The forum was created to ensure that all conservation-related data from the reserve, especially biological elements, be widely available for all institutions involved.

[2] WCS' Guatemalan NGO partner in the conservation of the Maya Biosphere Reserve.

Key activities and their methodology:
The successes of the previous year were the direct result of working with numerous stakeholders to build greater support for the Multiple Use Zone. As the "de facto" heart of the reserve, this adaptive and participatory strategy for its conservation is clearly one of our most important activities. We will continue collaborating with other groups to support the activities of the Mesa Multisectorial, continue administering Plant Family Foundation investments and providing accompanying technical support, and continue engaging local communities and their leaders on a regular basis to harness their potential to help develop solutions. In keeping with the pattern of the last few years, we will "consolidate" the partnership by preparing joint, collaborative proposals for funding and presenting them to donors. Based on past experience, we are hopeful that this process will help to extend the current network of collaboration to more donor and public institutions, thereby ensuring that local actors, government, and other NGOs are working together to conserve the Multiple Use Zone of the reserve, and to support local communities interested in sustainable management. Roan McNab and Luis Romero will lead WCS efforts in this year-round activity, joined by our NGO partner Bayron Castellanos of Asociación Balam.

Results/outputs:
Expected results include the strengthening of community-based fire prevention and protection programs. We will also develop and present at least two significant joint proposals; at least one of which will focus on community-based fire prevention and protection efforts. As in past years, WCS will focus on maintaining ongoing support for the Control and Vigilance Committee of OMYC, Uaxactún; this pilot group has developed into a model for other concessions in the reserve. We expect that the Mesa Multisectorial will continue to function, providing a springboard to other opportunities that will provide resources and technical support for community groups working to improve sustainable management initiatives across the reserve.

Threats addressed:
Hunting; market demand for wildlife; timber extraction and associated activities; theft of macaw fledglings from nests; unsustainable xate palm frond extraction; forest conversion; forest fires; uncontrolled human access; and the lack of information at the local and national levels.

Level of Effort (Total Activity 1.3): $20,500 (USAID/EGAT: $500; Plant Foundation: $20,000)

OBJECTIVE 2: Develop and implement sustainable and adaptive mechanisms to strategically address threats across the Maya Biosphere Reserve landscape

Initial MBLLP conservation interventions were selected jointly by WCS and CONAP members (Consejo Nacional de Áreas Protegidas, the National Park Service) based on extensive local experience and previous threats analyses. Updated threats analyses, incorporated into final Human Landscapes (developed during FY07), as well as the results of WCS biological monitoring activities in the biosphere helped provide a more complete understanding of local conservation needs and challenges.

Throughout the span of the MBLLP project, WCS has been fortunate to have access to real time threats monitoring through our collaboration with the CEMEC laboratory and, during the dry seasons, via over-flights conducted by Light Hawk[3]. This information has allowed us to constantly evaluate the effectiveness of many of our field interventions. In other cases, our staff and local community partners in the field have been our eyes and ears, helping us to prioritize activities based on impact.

Our interventions during the upcoming fiscal year will focus on those field activities deemed to have the greatest conservation impacts. For example, thus far, one of our most successful and clearly one of the most urgent "landscape interventions" has been the protection of the macaw nesting areas in the eastern Laguna del Tigre area. We have achieved this through a combination of targeted interventions (including direct protection of nesting sites),

[3] Light Hawk is an international non-governmental organization that provides over-flights for conservation purposes (exploration, aerial observation, surveys, mapping, monitoring, surveillance, education, etc).

involvement of communities in macaw monitoring and protection, monitoring of macaws in timber concessions, field sampling of other species, environmental education of youth via scholastic monitoring of nests, over-flights with Light Hawk, the prevention and suppression of forest fires, and the development of basic field infrastructure (with non-GCPII funds). Five strategic macaw nesting sites are currently being monitored and protected (El Peru, El Burral, La Corona, Peñón de Buena Vista, and the AFISAP forest concession). These efforts are based on the location of 29 active macaw nests detected across an area of approximately 150,000 hectares during FY08.

A majority of the GCPII funds in FY09 will be used to continue the implementation of successful interventions at the Laguna del Tigre macaw sites, to maintain monitoring activities across the reserve to the extent possible, and to continue to test and refine pilot initiatives that hold promise in other parts of the reserve. Accordingly, surveys of species will be restricted to scarlet macaws (by the far the most threatened Landscape Species within our focal area), white-lipped peccaries and jaguars. Surveys of other species will be undertaken based on our ability to raise funds from other sources.

Level of Effort (Total Objective 2): $175,339 (USAID/EGAT: $68,500; WCS: $22,000; WCS-JCP: $5,000; Asociación Balam: $6,000; LightHawk: $10,000: Rainforest Alliance: $10,000; Romano Pizzeria (Rossell): $6,667; Panthera Foundation: $13,333; TNC: $24,846; BBC: $8,993)

Activity 2.1 Scarlet macaw nest protection

WCS field personnel oversaw the maintenance of the 47-kilometer fire break that serves to delimit the intact, un-colonized section of the park and the Laguna del Tigre Biological Corridor. CONAP, DIPRONA, and army personnel patrolled the area to dissuade potential invaders from illegal encroachment into the area. During the past FY, with the financial support of TNC, four members of AFISAP were employed as the guards of the El Burral nesting site. These personnel improved the camp facilities and helped with the maintenance of the Corona-Burral fire break. We continued involving members of the adjacent Q'eqchí Maya community of Paso Caballos in the conservation of macaws and their habitat at El Peñón de Buena Vista. In March 2008, the activities in Peñón de Buena Vista were suspended due an illegal invasion of settlers at the Laguna de Yalá area, located next to our working area. The invaders cut down and burned more than 70 ha of tropical forest to plant crops. El Peñón de Buena Vista field station was partially burned by invaders to attempt to intimidate WCS and CONAP personnel, and personnel were temporarily evacuated and transferred to other nesting areas. Although no macaws were reproductively successful in the area this season, the presence of field personnel was crucial to put pressure on authorities to evict squatters from this important scarlet macaw nesting area. We are currently waiting for the state to increase security before returning to work in the area.

Key activities and their methodology:
We have received verbal confirmation that AFISAP is able and willing to hire two or three of their members to be posted in El Burral, so long as WCS hires one additional AFISAP member to be posted there. AFISAP authorities understand the importance of this checkpoint as a barrier to the threats to their forest concession. Using El Burral as their headquarters, these personnel will patrol the western border of the AFISAP concession. We are still awaiting the confirmation of an extension of the TNC biological monitoring grant. Although this grant will fund biological monitoring activities, TNC understands that checkpoint staff who aid scarlet macaw nest success monitoring are also responsible for monitoring encroachment.

We will continue the Pilot Project for community–based monitoring and protection of macaw nests at Peñón de Buena Vista, within Laguna del Tigre National Park. During FY09, one of the most experienced members of the scarlet macaw nesting success monitoring group (Eliberto Muñoz) will assume management oversight of the Peñón de Buena Vista checkpoint. Mr. Muñóz will be the point person between WCS, CONAP, BALAM and DIPRONA.

Logistical support from the Asociación Balam will allow us to continue the scarlet macaw nesting protection program in El Perú and La Corona. We will work with Balam personnel to monitor scarlet macaw nesting success and to coordinate the protection activities with CONAP, DIPRONA and the Army in these important sites. Rolando Monzón (WCS) and Ramón Peralta (Balam) will be the point persons on these activities.

In Sept, 2008, WCS-Guatemala was invited to apply for a grant from USAID-Guatemala for forest protection and fire prevention in areas of biological importance over an 18-month period (October 2008 – April 2010). These funds will be used to improve field presence of Civil Society partners and Guatemala authorities in the "shield" area of Laguna del Tigre, in Carmelita, and Mirador. Funds will also allow SIPECIF and CONAP to respond to threats across the reserve through immediate response patrols and fire suppression activities.

WCS and Asociación Balam staff responsible for implementation of the strategy include: Roan Balas McNab, Bayron Castellanos, Rolando Monzón, Rony Garcia, Ramon Peralta, Pedro Díaz, Kender Tut, Eleazar González and Marcial Cordova, as well as the rest of the WCS Guatemala field staff. COCODES[4] (the Community Development Council) of Paso Caballos, Proyecto Arqueológico El Peru-Waka, CONAP, IDAEH, Light Hawk, DIPRONA, and ACOFOP will provide additional support.

Results/outputs:
We expect that fire impacts will again be minimized and macaw fledgling rates maintained. A report on the results of the fire protection activities provided to USAID-Guatemala, summarizing the extent of habitat and number of nests affected by fire across the focal protection sites; a report on the final results of macaw nesting during the 2008 nesting season including the number of active nests found, and the number of chicks fledged.

Threats addressed:
Hunting; theft of macaw fledglings from nests; forest conversion; forest fires; uncontrolled human access; and lack of information at the local level.

Level of Effort (Total Activity 2.1): $26,500 (USAID/EGAT: $22,500; BALAM: $4,000)

Activity 2.2 Improved control of access via monitoring and checkpoints

A new strategy for protection of the "Ruta Carmelita" was developed with the support of private partners and the new national administration, based on the construction of a checkpoint at the entry point into the Multiple Use Zone (i.e. San Miguel), just south of the abandoned Pescaditos checkpoint. The San Miguel checkpoint has been constructed thanks to the leadership of Asociación Balam, the field engagement of CONAP Petén, and the financial support of members of the Mesa Multisectorial (i.e. the US Department of the Interior, the Foundation for Anthropological Research and Environmental Studies (FARES), and Friends of the Natural and Cultural Patrimony of Guatemala (APANAC)). The extremely effective Achiotal checkpoint continues to function on the border of the Carmelita and AFISAP community forest concessions. This important outpost continues to limit the expansion of illegal colonists into the collapsing community concessions of La Colorada, Cruce a la Colorada, and Pescaditos.

Key activities and their methodology:
Controlling access through field monitoring and checkpoints remains perhaps the most direct intervention undertaken by the MBLLP project to address the threats identified through the LSA process and associated monitoring activities. Therefore, CEMEC and WCS personnel will continue to update our GIS "access layer" via our collaborative monitoring of the condition of roads across the reserve. During this process we will inform governmental authorities and local managers of evidence of illegal access and resource use, with a special focus on areas where access appears to have increased.

We will also focus on increasing the promotion and efficacy of manned checkpoints across the reserve. Key checkpoints include Manantial (along the Melchor-Tres Banderas road), Achiotal (along the La Colorada-Puerto Arturo road), Peñón de Buena Vista (Laguna del Tigre National Park) and San Miguel. WCS will provide assistance to CONAP staff and DIPRONA natural resource police, helping them obtain additional support from other sources to improve these checkpoints. Upon establishment, it will be imperative to ensure that formal operating procedures are in place, including plans for regular forest patrols from each checkpoint and operating procedures for checking people

[4] Consejo Comunitario de Desarrollo

and vehicles that attempt to pass the barriers. To this end, we will work with CONAP on developing a manual of basic operating procedures for manned checkpoints.

The central challenge related to this intervention consists of the lack of police and army personnel required to man new checkpoints. This dearth of staff is even more acute than the financial challenge inherent in establishing such outposts. To this end, WCS and partner organizations have begun collaborating with governmental institutions to prioritize the most important sites for checkpoints, while helping to raise funds and identify new sites to be manned as soon as staffing conditions permit.

Local staff responsible for this activity include: Roan Balas McNab, Bayron Castellanos, Luis Romero, Victor Hugo Ramos, and Rony Garcia, with the collaboration of personnel from CONAP, CEMEC, Asociación Balam, and ACOFOP.

Results/outputs:
Expected results include the expansion and improvement of the current system of checkpoints across the eastern MBR. Outputs include strategic plans for each of the checkpoints and the development of a manual of basic operating procedures for each site.

Threats addressed:
Uncontrolled human access; and the lack of information at the local-national level.

Level of Effort (Total Activity 2.2): $9,400 (USAID/EGAT: $3,400; WCS: $4,000; BALAM: $2,000)

Activity 2.3 Surveys for macaw nests in timber concessions

AFISAP managers were extremely helpful in FY08; their members helped WCS field technicians in scarlet macaw nesting success monitoring and the nest search in the Laguna del Tigre, Biological Corridor and AFISAP areas. Although their activities were focused in El Burral, Biological Corridor, four previously unknown nests, two in Laguna del Tigre, one in El Burral and one in AFISAP, were discovered thanks to their efforts.

Key activities and their methodology:
This fiscal year we plan to search for nests in the AFISAP forest concession and adjacent sections of La Colorada employing the standard methodology of searching from Maya ruins, from lookout points in emergent trees that rise above the canopy, and from along trails. As explained in Activity 2.1 AFISAP has verbally confirmed that they will hire two or three AFISAP members to will be posted in El Burral if we can hire one additional member to man the checkpoint. Because its proximity to the concession allows for easy searches of unexplored areas on foot, these personnel will use El Burral as the headquarters from which to patrol the western border of the AFISAP concession searching for scarlet macaw nests. At the end of the survey season, we will officially present the results to the forest concession authorities.

The coordinator of these activities will be Rony Garcia, with the support of Marcial Cordova, Edilberto Muñoz, Henry Tut, Eleazar González and Kender Tut. Field activities will take place between January-June 2009.

Results/outputs:
Greater protection of macaws on timber concessions. A final report with an updated record of the historical and current distribution of nests within the AFISAP forest concession.

Threats addressed:
Timber extraction and associated activities; theft of macaw fledglings from nests; and the lack of information at the local level.

Level of Effort (Total Activity 2.3): $3,500 (USAID/EGAT: $3,500)

Activity 2.4 Test and evaluate xate management alternatives
For the last three years, Organización Manejo y Conservación (OMYC) of Uaxactún village, WCS Guatemala, and the Rainforest Alliance have collaborated to implement a pilot project focused on the development of an alternative, certified commercial harvest of an understory palm frond, known locally as "xate". The project is focused on two central objectives: 1) to increase the sustainability of one of the Uaxactún villagers' most vital economic resources; and 2) to provide increased opportunities for the women of the village to be engaged in employment and natural resource management.

Under the new management system promoted by this project, xate harvested in the Uaxactún area is sold at a premium price to Continental Greens Ltd. of Houston, Texas, who agreed to this arrangement in order to stimulate the ecological and social sustainability of the enterprise. This project was developed as the result of an excellent collaboration between the Rainforest Alliance (RA) and WCS, with RA focusing on the market side of the enterprise and WCS focusing on the day-to-day operations of the xate bodega in Uaxactún where the fronds are sorted and bundled for shipping.

Key activities and their methodology:
During FY09, we will continue our coordination with CONAP and Rainforest Alliance to support OMYC's xate management efforts. To this end, WCS Guatemala will continue to finance the OMYC xate bodega administrator, Mr. Julio Zetina.

In terms of local management challenges, our program will take the following steps to increase the viability of the adaptive management of xate in the Uaxactún concession:

1) We will continue collaborations with CONAP, OMYC, and Rainforest Alliance to ensure that the Xate Management Plan for Uaxactún is implemented satisfactorily.
2) We will continue to offer OMYC the services of the CEMEC mapping institute to keep track of the camps throughout the concession where xate is harvested. This is aimed at ensuring that appropriate recovery time is provided for the resource in the wild.
3) We will continue to provide technical support to OMYC's community-based control and vigilance guards in Uaxactún, who are charged with field monitoring and inspections across their concession.
4) WCS biologists will continue to monitor xate waste in the villages of Uaxactún, Carmelita, and San Andres during FY09.
5) MBLLP staff will collaborate with CONAP to continue a similar monitoring program in the xate bodegas of the main exporters in the central area of Petén.

MBLLP staff responsible for the monitoring will be: Rony Garcia and Gabriela Ponce. Roan McNab and Julio Zetina will be responsible for the administrative support to the xate bodega in Uaxactún, and for information flow between OMYC and CONAP. Nery Solis (CEMEC) will be responsible for providing maps and spatial information to OMYC for improved management and adoption of the criteria in the xate management plan.

Results/outputs:
We expect that the long-term result of these activities will be a more sustainable harvest of xate, with increased local benefits for women, xateros, and OMYC alike. Likely "losers" of the implementation of these activities are the administrators and owners of companies that have long supported the unsustainable model of "quantity-based" payments to xate harvesters (as opposed to payments which ensure the quality of xate harvested). Short-term results include the provision of necessary technical support and improved management of the xate bodega of OMYC-Uaxactún. The final output will consist of an annual report on the state of xate management in Uaxactún, with recommendations for future efforts in other areas.

Threats addressed:
Unsustainable xate palm frond extraction; lack of information at the local level.

Level of Effort (Total Activity 2.4): $23,000 (USAID/EGAT: $3,000; WCS: $10,000; Rainforest Alliance $10,000).

Activity 2.5 Monitor trends in landscape cover

Continuing a collaboration that started in 2001, WCS and CEMEC/CONAP produced deforestation estimates and analysis for the period between 2006-2007 using LANDSAT ETM SLC. This activity allows the Guatemalan Government (and partner organizations) to view credible and timely estimates of the rate and location of the conversion of MBR's forest cover to agricultural and pastoral uses and to evaluate the effects of conservation interventions. In a parallel activity, a time series of deforestation spanning 1986-2007 is being incorporated into a system to monitor the ecological integrity of the MBR. This baseline rate of deforestation will also be used to support a Carbon Finance Mechanism for Protected Areas in Guatemala; in a joint collaboration with Conservation International, this baseline rate and projections of the extent and location of future deforestation were used to develop preliminary estimates for a Reductions of Emissions from Deforestation and Degradation project.

Key activities and their methodology:
We will continue to collaborate with CONAP and the CEMEC mapping institute to analyze trends in landscape cover and fire prevalence across the MBR, with a detailed focus on the eastern edge of Laguna del Tigre National Park – the fire and immigration frontier that threatens scarlet macaw nesting areas and the still-intact dense forests of the eastern Maya Biosphere Reserve. Ongoing surveys will help identify current "threat hotspots", and continue to allow WCS and CONAP to strategically target threat abatement activities. Work will be executed from October 2008 through September 2009, and will require the acquisition of satellite images during and after the spring months (Feb-May), when skies are more likely to be clear and the majority of forest fires and clearing occurs. The coordinator of this activity will be CEMEC Director Victor Hugo Ramos, with the support of Julian Zetina.

Results/outputs:
Results include an annual assessment of landscape cover changes and the prevalence of fire within individual management units (parks, concessions) across the MBR, leading to targeted management interventions.

Threats addressed:
Forest conversion; uncontrolled human access; and the lack of information at the local level.

Level of Effort (Total Activity 2.5): $9,100 (USAID/EGAT: $9,100)

Activity 2.6 Monitor trends in precipitation and climate (assessing fire risk)

Since 2003 MODIS fire pixels have been used to monitor forest fires within the MBR in near real time. This activity was continued in 2008 with the distribution of weekly reports to CONAP, WCS, SIPÉCIF, other institutions, and the general public. The reports were made available to interested parties using an email list and via the web[5] as a collaboration of CATHALAC-SERVIR. In addition to weekly updates, a general outlook for the 2008 fire season was prepared and presented to SIPECIF (the Guatemalan Government's fire prevention agency) on March 5, in order to provide all the acting parties in fire prevention/control with the basic information necessary to plan for the season.

Weather monitoring activities were discontinued last year due to weather station malfunctions. New basic, more reliable weather monitoring equipment was acquired and will be placed in sites where communication with CEMEC offices is ensured in order to use the data in near real time to assist fire monitoring in 2009.

Key activities and their methodology:
We will evaluate incoming data and execute the early alert system on fire risk based on the analysis of weather data and phenological observations obtained from analysis of MODIS EVI data and field surveys. This system will enable us to predict the potential risk of fires during the fire season by late February or early March. It will also improve management decisions taken by SIPECIF, helping to justify budget requests (based on the seasonal outlook) and work plans. We will continue monitoring fires during the fire season (Feb-June) using fire pixels from MODIS, producing

[5] http://www.servir net/index.php?option=com_content&task=view&id=58&Itemid=57

periodic reports as well as daily email updates on the current situation. These products will be distributed (as in the past) via email to numerous government and non-governmental stakeholders, including the press and local communities. These reports will also be posted on the internet[6], as was done in 2006-2008. The coordinator of this activity will be CEMEC Director Victor Hugo Ramos, with the support of Nery Solis, and field support from CONAP and IDAEH staff.

Results/outputs:
A preliminary report on the patterns of climate in 2008 will be made available in January 2009; real time monitoring of the amount of precipitation as estimated by NOAA will be conducted during the entire 2009 dry season; and reports on the level of risk provided weekly to a number of stakeholders via internet. All outputs aim to control fire impacts.

Threats addressed:
Forest fires; and the lack of information at the local level.

Level of Effort (Total Activity 2.6): $6,000 (USAID/EGAT: $5,000; WCS: $1,000).

Activity 2.7 Monitor trends in macaw population

WCS-Guatemala and MBLLP personnel have monitored the nesting success of macaws during the last six breeding seasons in El Peru and Burral (2003-2008), and for the last four years at the Peñón de Buena Vista. Each season we visit tree cavities and check them to determine nesting activity, number of eggs, hatchings, depredated chicks, and successful fledgings.

Since 2006, we have been able to monitor nesting success at the site of La Corona and within the AFISAP community forest concession, including expanding searches for active nests at both sites. In the 2008 nesting season we monitored 29 active nests across the Maya Biosphere (two fewer than in 2007) and we reported at least 25 successful fledges, an increase of 8 fledges from 2007. The greatest percentage of nesting success was reported in La Corona, with almost half of the successfully fledged macaws reported for Guatemala.

Key activities and their methodology:
We will continue to focus our macaw monitoring efforts on determining the number of active breeding pairs located in 5 key areas/sites of the reserve: El Peru, Peñón de Buena Vista, La Corona, El Burral, and AFISAP. This focus on determining the number of active nests within each key area will allow us to monitor nest activity in the same way each year in the future, sampling each site as a subset of the entire population. The number of active nests within these five sites will be our indicator to determine if the macaw population is stable, rising, or in decline. In addition to these activities, we will continue to monitor the nesting success of each nest whenever possible. This type of field monitoring requires regular visits to a site, providing important dividends in terms of field presence, vigilance and protection.

In FY08, we installed continuous recording video surveillance systems in five natural cavity nests in El Perú, in order to detect the major source of chick depredation, and to test a new way to monitor nesting success in inaccessible sites. The video cameras showed that collared forest falcons (*Micrastur semitorquatus*) were responsible for the witnessed chick depredation. This FY, we will reinstall these systems in the same cavities in order to determine if the changes that we plan to make to the cavities effectively deter predation or not.

Participatory monitoring of macaw nests will continue with the schoolchildren of Paso Caballos, Pipiles, and La Colorada. Children will be recruited, via outreach with their parents, to help us identify nests. If new nests cannot be identified, known nests will be monitored. Select nests will be monitored twice a month during the breeding season. During each visit, students will visit nesting sites and have the opportunity to monitor the activity inside the cavity nest with the help of the previously installed video surveillance system. In May 2007, we successfully tested this in El Perú with the Paso Caballos schoolchildren. This system permits us to share information (in real time) with all the children

[6] On the SERVIR site: http://servir.nsstc nasa.gov/fires/cemec html

that will participate in the monitoring program, avoiding the necessity to climb the nest. At the end of the breeding season, we will present the schools with a diploma recognizing their involvement and support in the macaw conservation program. This diploma will be awarded by local authorities along with WCS-Guatemala staff during a closing ceremony. WCS personnel include Rony Garcia, Marcial Córdova, Gabriela Ponce, Kender Tut, Pedro Díaz, Eliberto Muñoz, Eleazar González, Antonio Xol, Victor Mendez, and schoolteachers from the three schools (Paso Caballos, La Colorada and Pipiles)

Results/outputs:
Results include an inventory of the number of active nests at the five main macaw sites within the reserve, the number of active nests at Pipiles, and the identification of areas subject to nest robbing (by human and non-human predators) to better orient protection efforts. We will produce an annual report detailing nest distributions and nesting success across the eastern MBR at the end of the breeding season (in September 2009), including a section describing the advances from the school monitoring activity.

Threats addressed:
Theft of macaw fledglings from nests; lack of information at the local-national level; forest conversion; and forest fires.

Level of Effort (Total Activity 2.7): $37,416 (USAID/EGAT: $15,000; WCS/Guatemala: $1,000; TNC: $12,423; BBC: $8,993)

Activity 2.8 Develop methodologies to monitor trends in selected landscape species

In 2008, we estimated jaguar abundance using camera traps in Dos Lagunas, Mirador-Río Azul National Park, El Burral, Biological Corridor, and in two community forest concessions managed by Cooperativa de Comercialización Carmelita and Asociación Forestal Integral San Andrés Petén (AFISAP). The Carmelita & AFISAP survey report the highest jaguar density estimated to date in Guatemala.

MBLLP personnel also collaborated with WCS's Jaguar Conservation Program (JCP) in coordinating the Guatemalan jaguar corridor ground-truthing. This survey provided an opportunity to share information about the jaguar corridor initiative with other institutions like FUNDAECO (Fundación Para el Ecodesarrollo y la Conservación). The ground-truthing also included a jaguar presence-absence survey in Xutilhá and Sierra Santa Cruz; two important sites along this corridor.

In order to improve the monitoring of scarlet macaw nesting success, Steve Gulick of Wildland Security designed a continuous surveillance Infrared camera system that was installed in 5 natural nests in El Perú nesting site, Laguna del Tigre National Park. These ground-breaking recording systems enabled us to record 3 natural chick predation events caused by the same species, the collared forest falcon (*Micrastur semitorquatus*).

Fortunately, with the support of veterinary medicine student Melvin Mérida from Universidad de San Carlos de Guatemala, we captured 3 white-lipped peccaries in Mirador –Río Azul National Park in FY08. We placed collars with VHF transmitters on the peccaries and we will keep following their movements through the end of the year, or until the collars' batteries run out of power.

Key activities and their methodology:
As described under Objective 2, during FY09 we will focus our field efforts on the two species most likely to motivate local actors and decision makers in Guatemala to conserve the Maya Biosphere Reserve: scarlet macaws and jaguar. Additionally, we will continue to attempt to gain a better understanding of the ranging patterns and habitat needs of a third Landscape Species, the white-lipped peccary. One underlying goal of the field work will be to continue to refine the methodologies to best monitor trends in our selected Landscape Species and to evaluate our Biological Landscapes. In each case, we will strive to obtain value-added conservation impact by using field efforts as "interventions" in their own right (i.e. using the field presence of researchers to dissuade hunting, poaching, and looting in fully protected areas, and building alliances with local managers to create more support for conservation goals).

This year, we will receive the support of JCP and the Panthera Foundation, to evaluate the abundance of jaguars in Melchor block community forest concessions, and continue with collaborating with University of Florida student Jose Soto's efforts to characterize jaguar conflicts on the southeastern edge of the MBR. Both of these efforts will allow us to improve the jaguar habitat quality model and increase our understanding of the state of jaguars in the Eastern MBR, where threats created by improved access (i.e. road building) are increasing.

For several years we watched a number of scarlet macaw chicks disappear during the nesting season without any apparent reason or obvious human involvement. Based on field observations, we supposed that these disappearances were caused by forest falcons. It was not until last year's installation of the continuous camera surveillance systems inside some natural nests in El Perú that we discovered that the responsible predator was the collared forest falcon (*Micrastur semitorquatus*). This system has also enabled us to test a new technique for monitoring nesting success. This FY, we will continue testing and improving this technique throughout the entire nesting area in order to develop a system with continuous and non-continuous recording video, depending on the situation.

A seasonal change in macaw abundance has been reported in some tropical forests, although opposing patterns for scarlet and red and green macaws have been found (Renton 2002[7], Karubian *et al.* 2005[8]). There is no data for the scarlet macaws of the Maya Biosphere Reserve in this regard, but a decrease in macaw sightings has been noticed during the wet season in the study sites, and it is believed that during this season some macaws migrate to the southern parts of the MBR and México. Seasonal variations in psittacine populations may also reduce the potential for sustainable management due to the difficulties of assessing the effect of habitat changes outside the management area on population viability. We will determine the abundance of scarlet macaws in the nesting areas of El Perú, El Burral and La Corona during the breeding and non-breeding seasons, to allow us to determine population and structure trends for macaws. We selected these three nesting areas due to field staff availability and the feasibility of logistics there. Observations will be conducted during the rainy season (August-January), when most of the macaws have left the area to feed in southern parts of the Reserve and México; and dry season (February- July) when macaws come to the area to reproduce. The dry season observations will determine the number of breeding and non-breeding pairs that come to the area. To determine abundance of scarlet macaws during the breeding season, canopy level observations (Whitacre *et al.* 1992[9], Karubian *et al.* 2005) will be conducted in emergent trees and existing lookouts.

This year we obtained a new set of remote capture digital Infrared cameras (RECONYX®) that will be used to test a new technique of access monitoring. Also, we will take advantage of these camera traps to sample jaguar abundance in the El Burral, Multiple Use Zone of the MBR in late 2008. Additionally, we will test whether hair-traps are a valid method to survey the presence of jaguars and others carnivores in areas where installing camera-traps is not a good option.

We will continue collaborating with the WCS Jaguar Conservation Program to investigate the relationship between cattle ranching and predation by jaguars across the reserve and around forest fragments south of the MBR. Also, we will be continue the camera trap surveys for presence-absence of jaguars in Xutilhá and Sierra Santa Cruz; two important fragments of the "Jaguar Corridor" between the Jaguar Conservation Units in Guatemala and Belize. We will continue ground-truthing the entire corridor in Guatemala.

The white-lipped peccary field research in Mirador-Rio Azul National Park will continue. Accordingly, we will collaborate with students, park guards, and other researchers to increase manpower and resources to the level necessary for successful implementation of field activities. Personnel of the Tikal National Park Biological Department have notified us that they are keen to collaborate with us to extend the white-lipped peccary project into the park.

[7] Renton, K. 2002. Seasonal variation in occurrence of macaws along a rainforest river. Journal of Field Ornithology 73(1): 15-19.
[8] Karubian, J., Fabara, J., Yunes, D., Jorgenson, J.P., Romo, D., & Smith, T.B. 2005. Temporal and spatial patterns of macaw abundance in the Ecuadorian Amazon. The Condor 107(3): 617-626.
[9] Whitacre, D. F., Jones, L. E., & Sutter, J. 1992. Censusing raptors and other birds in tropical forest: further refinements in methodology. pp. 39-52 *in* D. F. Whitacre and R. K. Thorstrom, (eds.), Progress Report V, Maya Project. The Peregrine Fund, Boise, Idaho.

The coordinators for all these activities will be: Rony Garcia, José Moreira, Gabriela Ponce and Marcial Córdova of the WCS MBLLP.

Results/outputs:
Results include improved knowledge of jaguar abundance throughout the Maya Biosphere Reserve, and a better understanding of white-lipped peccary movements in the northeastern part of our focal landscape. Outputs will include a final report on the results of jaguar sampling in El Esfuerzo community concession, the use of new methodology to monitor scarlet macaw populations, as well as a final report on the use of water bodies by white-lipped peccaries in Rio Azul.

Threats addressed:
Lack of information at the local-national level; subsistence and market hunting (via increased field presence).

Level of Effort (Total Activity 2.8): $43,422 (USAID/EGAT: $5,000; WCS-JCP: $5,000, Romano Pizzeria (Rossell): $6,667; Panthera Foundation: $13,333; WCS Guatemala: $1,000; TNC: $12,423).

Activity 2.9 Increase Economic Sustainability of WCS Conservation Management

During FY08, our general strategy for increasing the economic sustainability of our programmatic activities was based on a four-pronged approach, including: 1) the continued promotion of financial sustainability projects; 2) the development of more proposals for funding, and ensuring that the capacity for this is spread evenly amongst WCS staff and partner institutions with which we are collaborating; 3) the promotion and support of the WCS Capital Campaign; and 4) discussions on the state of the WCS project, and its contribution to stability in 10% of the surface area of Guatemala, with the US Ambassador to Guatemala, Mr. James Derham.

As a result of the broad strategy outlined above, FY08 yielded some very important advances in the economic stability of our program. This is particularly important due to the heightened threat levels across the reserve, as well as the new opportunities for conservation and sustainable development within the reserve (i.e. the Cuatro Balam Initiative) that portend greater levels of governmental support in the future.

Key activities and their methodology:
During FY09, as during the previous year, general strategies for increasing the sustainability of our programmatic activities will include the following approaches:

1) Continue promoting the financial sustainability of the projects that we initiate, especially those that have the potential to generate revenue or that might be absorbed by the Guatemalan Government;
2) Develop more proposals for funding, and ensure that the capacity for this is spread evenly amongst WCS staff and the partner institutions with which we are collaborating;
3) Promote and support the WCS Capital Campaign;
4) Continue with plans to graduate some WCS-initiated projects, including macaw protection activities, to our national partner Asociación Balam, which may be able to obtain funding not available to WCS Guatemala.

Project leaders, including Roan Balas McNab, Bayron Castellanos, Victor Hugo Ramos, and Rony Garcia, will collaborate to advance the objectives of this project.

Results/outputs:
Eventual new sources for sustained conservation funding to increase the scope of this workplan over the next year, and to allow activities to persist beyond the end of the GCPII funding.

Threats addressed:
Macaw poaching; all threats identified.

Level of Effort (Total Activity 2.9): $3,500 (USAID/EGAT: $500; WCS: $3,000)

Activity 2.10 Over-flights of the Maya Biosphere

For the ninth year in a row, WCS Guatemala received the support of Light Hawk, who executed over-flights of the Maya Biosphere Reserve with governmental organizations, NGOs, community-based representatives, and members of the press. This year, however, significant hurdles were encountered as a result of new governmental restrictions on the acquisition of AV-gas (aviation fuel) in the Petén. Over-flights occurred in February, April, and May, with additional flights in June being cancelled for personal reasons by the volunteer pilot.

In February 2008, two days of flights were cut short by an unexpected announcement by the Guatemalan Air Force that AV-gas would not be commercially available in the Petén for the foreseeable future. This unfortunate announcement forced us to reduce the amount of time flying, and execute only one over-flight of the reserve. Fortunately, this flight was done with Ing. Gerardo Paíz, the newly appointed Sub-Secretario Ejecutivo (Assistant Director) of CONAP. WCS and SIPECIF personnel accompanied Ing. Paíz on a flight over the eastern section of Laguna del Tigre, observing the significant challenges to the integrity of this section of the park and the scarlet macaw nesting areas just east of areas affected by illegal colonization. Challenges for the future include the lack of availability of AV-gas in the Petén.

Key activities and their methodology:
If we are able to solve the problem of the availability of AV-gas in Petén in FY09, the over-flights will once again be coordinated in the field by WCS-Guatemala staff in conjunction with personnel from CEMEC and CONAP-Petén. A fair amount of adaptive management is inherent to coordinating the flights, because we strive to obtain the greatest impact possible, and adapt to changing conditions and threats. However, we expect that a majority of the flights will again focus on helping to consolidate the “shield” in eastern Laguna del Tigre, as well as fire-spotting and prevention. As in previous years, we will use the aerial platform as a way to raise public awareness about the threats to the reserve, including deforestation, fire, illegal colonization and agriculture. Flights will occur between January and May 2009, based on aircraft and resource availability.

Results/outputs:
Results include greater national awareness of the true conservation status of the MBR, an assessment of the scale and geographic distribution of threats to the forest, reports to CONAP detailing findings, and improved protection of remote sections of the reserve. Aerial photographs taken by WCS and CEMEC technicians will be provided to the press and others to focus attention on the MBR. A final report on the activity will be developed for Light Hawk and provided to USAID.

Threats addressed:
Timber extraction and associated activities; forest conversion; forest fires; uncontrolled human access; and the lack of information at the local-national level.

Level of Effort (Total Activity 2.10): $13,500 (USAID/EGAT: $1,500; WCS: $2,000; LightHawk: $10,000)

OBJECTIVE 3: Learning and teaching best practices in the Maya Biosphere Reserve landscape and beyond

During FY09, the MBLLP will focus on successful interventions and the development of pilot projects testing new approaches to biodiversity conservation that involve local actors. We will share results publicly and encourage the participation of other local actors as a way of disseminating the lessons learned during previous years. As in the past, WCS-Guatemala staff will remain in constant dialogue with local actors such as CONAP, IDAEH, partner communities, ACOFOP, and other NGOs to ensure immediate adaptive management adjustments. WCS will make forest fire monitoring data immediately available to local actors, in some cases on a daily basis.

Level of Effort (Total Objective 3): $3,000 (USAID/EGAT: $1,000; WCS: $2,000)

Activity 3.1 Evaluation of the effectiveness of pilot projects promoted

In FY08, we re-evaluated three pilot projects, using participatory consultations with open-ended questions designed to solicit feedback from the diverse actors involved in a project. Those projects were: macaw protection activities (Activity 2.1); improved control of open access (Activity 2.2); and xate management (Activity 2.4).

Key activities and their methodology:
WCS personnel will continue to evaluate these pilot projects, using open consultations as previously described. The same three projects will be evaluated: macaw protection activities (Activity 2.1); improved control of open access (Activity 2.2); and xate management (Activity 2.4). Evaluations will include monitoring data for landscape targets, such as species and forest cover, where available. As in past years, the point of departure for the discussions will be open-ended questions, including:

1) Were you consulted before the initiation of the project?
2) Are the goals of the project clear?
3) Up until now, do you consider the project has been successful? Why or why not?
4) What would be required for the project to be more successful?
5) Do you desire to continue receiving WCS's support for this particular project?

Personnel responsible for conducting the evaluations will consist of the field leaders for each project. To the degree possible, we will involve CONAP representatives in the evaluations whenever the local groups consider this to be acceptable.

Results/outputs:
Results include brief reports on the feedback obtained on each of the pilot projects detailed above. Final recommendations will be made on the viability and utility of continuing with each project, as well as suggestions/recommendations for the future. These evaluations will be used to ensure adaptive program management.

Threats addressed:
Hunting; timber extraction and associated activities; theft of macaw fledglings from nests; unsustainable xate palm frond extraction; forest conversion; forest fires; uncontrolled human access; the lack of information at the local level.

Level of Effort: $00 (USAID/EGAT: $500; WCS: $1,000)

Activity 3.2 Strengthen Maya Biosphere Reserve and global conservation initiatives

MBLLP staff will continue to contribute to crosscutting LLP initiatives organized by the NY headquarters (see Activity 4). WCS-Guatemala will also continue to make public presentations on the results of project work, both in Guatemala and in the United States.

New scarlet macaw, white-lipped peccary, and jaguar sampling results (including an improved method for monitoring macaw nest sites and distribution) will be presented at diverse venues within Guatemala and internationally (with WCS-funded participation). Following this, we will attempt to educate the greater Guatemalan public about the threats facing scarlet macaws, white-lipped peccaries and jaguars within the MBR and across Guatemala.

The final results of the MBLLP project will be compiled on a CD and distributed to CONAP and other local and international partners.

Results/outputs:
The main output will be a final CD of the Human, Biological, and Conservation Landscapes produced over the course of the 6-year project. We expect to obtain press coverage for some of our biological studies. The main result of these outputs will be a greater national and international awareness of the state of the Maya Biosphere Reserve and the key Landscape Species that we are striving to conserve.

Threats addressed:
Lack of information and the local, national, and international levels.

Level of Effort: $00 (USAID/EGAT: $500; WCS $1,000)

OBJECTIVE 4: New York Coordination Unit Strategy: Guide the design and testing of wildlife-focused planning, implementation, and evaluation tools for effective conservation at a landscape scale, and promote learning across sites and beyond

The NY-based Coordination Unit (CU) of the Living Landscapes Program (LLP) is designed to develop and test wildlife-focused, landscape-scale approaches to biological conservation across multiple sites. To ensure the widespread utility of these new conservation approaches, the program is testing them within landscapes that encompass a diverse array of ecological features, land-uses, resource-use issues, and jurisdictional arrangements. The CU is charged with designing and managing the program to develop new approaches, to facilitate and harmonize testing and implementation among these core sites, and to capture the synergistic benefits of diverse experiences. This unit guides the development of landscape-scale conservation strategies, tools and techniques; assists in the design and development of cost-effective intervention and monitoring programs at these sites; promotes cross-site learning; and ensures communication among the sites, WCS staff (central and field), USAID (DC and missions), and the larger conservation community.

During FY09, the priority for the Coordination Unit will remain working with field sites to promote adoption of best practice tools for effective conservation at a landscape scale, consolidating lessons learned and focusing to an even greater extent on sustainability of key activities. As this is the last year of GCP, we will work closely with our field sites to develop close-out reports that effectively capture key approaches, core activities and lessons learned in a concise and engaging format.

FY09 Level of Effort: (Total Objective 4): $ 47,107 (USAID/EGAT: $32,107; WCS: $15,000)

Activity 4.1 Provide technical assistance to site-based conservation
Members of the NY Coordination Unit will provide technical input to all field site operations detailed in the previous sections of this implementation plan, some of which will involve consultation at sites, analysis in NY, and ongoing communication, advice and support, as needed. This year we will role out the use of Miradi at all GCP sites as a way to integrate many of the strategic planning and adaptive management tools that LLP has developed over the life of the GCP and to provide vital field feedback to the Miradi development team at the Conservation Measures Partnership and Benetech. Dr. Wilkie will also work closely with The Nature Conservancy to explore options for WCS gaining access to the ConPro web database developed by TNC to upload Miradi project files and conduct cross project synthesis and analysis.

With the addition of the South Sudan Transboundary Landscape to our portfolio of sites the NY Coordination Unit will provide targeted assistance to the new landscape team (and their Ugandan transboundary colleagues) to make use of LLP strategic planning and adaptive management tools – most specifically threats assessments, conservation target selection (landscape species), conceptual modeling, and monitoring frameworks. We will also explore the conservation value of and opportunities for modeling biological and human landscapes across the Transboundary area.

Results/Outputs:
Focused and timely technical assistance and collaboration provided to field sites based on needs, leading to conservation landscape strategies; targeted monitoring of effectiveness; and implementation of processes to increase participation of stakeholders; pilot testing of Miradi and user feedback for improvement of present modules and development of future modules.

Level of Effort: $18,000 (USAID/EGAT: $15,000, WCS: $0)

Activity 4.2 Design, implementation, and testing of decision support tools

Activity 4.2.1 Living Landscapes Program technical manuals

The Living Landscapes Program will continue to produce brief how-to guides, called Technical Manuals, after field testing and fine-tuning the methods at several WCS field sites. In FY09, Dr. Didier will complete one technical manual describing the procedures and steps for setting spatially explicit conservation priorities using LSA products. The manuals are designed to provide clear and practical instructions to field practitioners on using a number of conservation tools. The manuals will be translated into Spanish and French and disseminated to WCS projects, partners (government, NGO and local), and other conservation colleagues.

Activity 4.2.2 Landscape Species Approach progress

In FY09, LLP-NY staff will conduct a second 2-week course on the Landscape Species Approach for interested staff from WCS projects around the world. The course will be designed to give a conceptual overview of all the LSA tools and to provide field staff with an opportunity to learn the details of the tools and apply them to their individual sites. As in FY08, we will provide an overview of Miradi and mentor staff to begin to develop a Miradi database for their project.

Activity 4.2.3 Integrating strategic planning and project management

LLP-NY staff will continue to work with our field sites and WCS NY operations (i.e., regional program and accounting staff) to roll out a process for integrating strategic planning with operations planning and reporting. With the release of Miradi 2.0 and the incremental roll out of this desktop solution to landscape scale planning and reporting, we will work with WCS NY operations staff and field staff to provide feedback to the Miradi development team as to how best to improve modules for integrating strategic planning, work planning and activity costing (budgeting) modules.

Results/Outputs:
Technical manuals designed, tested in the field and distributed in hard copy and electronically (on CDs and on-line) for wider distribution. Technical feedback, based on field experience, to the Miradi development team for fine tuning or developing new modules in Miradi that integrate project strategic planning with annual financial management.

Level of Effort: $10,000 (USAID/EGAT: $5,000, WCS: $5,000)

Activity 4.3 Catalyze cross-site and cross-organizational learning, and communication

Activity 4.3.1 Annual meeting of WCS/LLP Staff

In this last year of the GCP the Living Landscapes Program plans to bring together the project leaders of many of our landscapes (USAID supported and some not) in NY to conduct a forward looking exercise with senior WCS/NY regional staff that will help build on the success of the GCP and guide our conservation investments and tools development into the future.

Activity 4.3.2 CMP: leadership, design, writing and audits

LLP-NY staff will continue to play a leadership role in the identification, design and implementation of Conservation Measures Partnership activities. We will work closely with all CMP members to identify best-practice tools to use as models for development of Miradi modules. We will provide CMP with ongoing lessons from our efforts to integrate project strategic planning and annual financial management, and offer recommendations as to how this experience can help guide the development of Miradi.

Activity 4.3.3 Development and dissemination of final reports for each site: showcasing and sharing lessons learned

LLP-NY staff will work closely with our field sites to generate close-out reports based on the format proposed by WCS and fine-tuned by USAID.

Results/Outputs:
Close-out reports for each site will be generated and widely disseminated.

Level of Effort: $15,000 (USAID/EGAT: $10,000, WCS: $5,000)

Activity 4.4 Application of Living Landscapes Program tools beyond core sites

Activity 4.4.1 Training workshops and technical assistance in the use of LLP tools

LLP-NY staff will work with the WCS Latin America program to integrate LLP tools developed with GCP support into their Amazon Andes Conservation Program landscapes. Dr. Didier and Strindberg will conduct a workshop in November to train staff to develop Miradi projects for their landscapes and to harmonize landscape species monitoring methods.

In FY08 WCS developed a collaborative project with TNC and WWF to convert LLPs 2-week introduction to GIS course for distance learning. LLP-NY staff will continue to work with TNC and WWF to finalize and launch this innovative approach to GIS training for the conservation community.

Activity 4.4.2 Technical Manuals

We will continue to make our series of Technical Manuals available to conservation practitioners and decision makers on our website, as hard-copy booklets and on CD. Manuals are available in English, French and Spanish.

Results/Outputs:
Principles, practices, and tools distilled from implementation of the USAID/EGAT-funded sites to other site-based conservation projects around the world. New manuals will be translated into French and Spanish and distributed. An introductory conservation GIS course will be available for free on the web.

Level of Effort: $5,000 (USAID/EGAT: $0; WCS: $ 5000)

Activity 4.5 Ensure coordination and communication services for the program

The LLP program director and/or assistant director and LLP program staff will continue to communicate with staff from the core sites and WCS regional programs to discuss the development and sustainability of the program, on-the-ground implementation of the Landscape Species Approach, and further development of tools relevant to the approach. Program staff will also meet with collaborators, NGOs, governmental officers, and representatives of other stakeholder groups to promote the use of LLP strategies and tools.

In this last year of GCP, LLP-NY will focus support to field staff in capturing lessons learned, as well as continued support in reporting on Performance Monitoring forms, and submitting the last Annual Report/Closeout Report. The program director and/or assistant director and other WCS staff members (as necessary) will attend quarterly USAID/EGAT meetings in Washington DC and will ensure regular reporting and updates to USAID.

Results/Outputs:
The Coordination Unit will continue to serve as a hub for management and communication regarding the Living Landscapes Program among LLP field site staff, USAID, WCS/Regional staff, current and potential conservation

partners, and interested members of the general public. The CU will ensure timely preparation and submission of USAID reports.

Level of Effort: $ 2, 107 (USAID/EGAT: $2,107; WCS: $ 0)

FY09 TRAVEL ESTIMATE:

Name	**Destination**	**Reason**
Project Director and/or Assistant Director	Guatemala	Program oversight and management support
Roan Balas McNab & Rony García	NY	Final Living Landscapes Meeting with USAID-funded site Project Directors in NY