



## ADVANCING JAGUAR CONSERVATION IN THE AMERICAS

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**A final report to**  
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## 1. INTRODUCTION

The Wildlife Conservation Society (WCS) Jaguar Conservation Program (JCP) entered into 2008 with substantial momentum that began with the Department of State (DOS) Central American Free Trade Agreement (CAFTA) and Dominican Republic grant in March 2007, and was accelerated by the Mesoamerican Regional Priority Setting Workshop held in Costa Rica in July 2007 (Paseo del Jaguar, heretofore referred to as “El Paseo”). The DOS grant presented concrete objectives and a rough chronology. At El Paseo, countries were asked to develop short-lists of priority actions that would advance jaguar research and conservation in their respective countries to be supported by Panthera. Some of these national short-lists had not been at all short, and negotiation with our partners was necessary in late 2007 and early 2008 to extract the most urgent priorities from the lengthy “shopping lists.” Honduras and Belize provided clear and concise objectives from the start. Nicaragua suffered a bureaucratic obstacle rendering them unable to traverse their southern border to the July 2007 priority setting meeting in San Jose. This set back was compensated for by the Nicaraguan National Paseo del Jaguar event in Managua in early 2008.

As we entered 2008, there were several other guiding milestones: a WCS Science and Exploration Great Cats Program meeting convened in New York in December 2007 and allowed the JCP Mesoamerica staff to meet and evaluate progress made and the tasks ahead. Also, the JCP and WCS Latin America and Caribbean Program (LACP) conducted a WCS planning meeting for Mesoamerica in early January 2008 and established which sites were immediate priorities for the regional program and which were not. Our presentation in February to Claudia McMurray, Assistant Secretary of State, and other Department of State personnel further defined the advancements made and plans for the four CAFTA DR countries of Guatemala, Honduras, Nicaragua, and Costa Rica.

The path for the JCP in 2008 was largely set by: 1) the work plan of the DOS grant; 2) the Paseo del Jaguar regional priorities started in July 2007 which were distilled for action by March 2008; 3) new ideas and opportunities generated as JCP knowledge of the region evolved during program execution; and 4) WCS institutional experience in Mesoamerica and further south in the vast conservation landscapes of South America. As we enter 2009, most of the objectives listed in DOS and El Paseo either have been met or are in the queue.

This summary will cover the advances made in Mesoamerica, highlighting our accomplishments and the challenges and next steps to consider. In this report, coverage of South America will be confined to the range-wide survey program and recent advances and priorities. The text will cover my activities as well as broader regional implementations in the region.

## 2. GUATEMALA

### *El Paseo*

Following negotiations it was decided to dedicate Panthera funds in WCS to the following:

1. Training in action Occupancy Surveys in the Xutilha-Sierra Santa Cruz quasi-JCU in southeastern Guatemala (stepping stones on the Honduras-Selva Maya corridor) \$18,197
2. Technical support for jaguar program, salary for Jose Moreira \$12,000

Total: \$30,197.

Jose Moreira served as the JCP point of contact and lead in Guatemala on *todos los asuntos tigres* (all jaguar matters). Since Jose was involved in all aspects of the 2008 WCS Guatemala jaguar research and conservation program, it is fitting that this report cover the full breadth of WCS Guatemala jaguar activities, organized as short notes, complete with abstracts authored by Jose below, and with eleven appendices accompanying.

### **Jaguar abundance and density estimates in the Maya Biosphere Reserve, Petén, Guatemala**

#### *Abstract*

The jaguar is the largest felid of the Western Hemisphere, where it plays an important ecological role as the top predator of the neotropics. Jaguars currently occupy 50 percent of their historical range and are threatened due to habitat loss, overhunting of prey species and direct persecution due to conflicts with humans. Jaguar populations are difficult to study due to their elusive nature, consequently, camera trapping techniques that are non-invasive have been developed to estimate jaguar abundances. In this report, we present the results of three camera trapping studies we carried out to estimate jaguar abundance and densities in the Maya Biosphere Reserve (MBR). We estimated jaguar abundances for the multiple use zone of the MBR in the forest concessions of Carmelita and San Andres (AFISAP), as well as the following protected areas of the MBR: Dos Lagunas Biotope, Mirador-Rio Azul National Park and El Burrel Central Biological Corridor (Figure 1 on page 4, and Appendices 1, 2, and 3). Each sampling session lasted approximately one and a half months and we evaluated the use of Calvin Klein's Obsession © perfume for men as a feline attractant. The density estimate obtained for Carmelita and AFISAP based on half the mean maximum distance measured (MMDM/2) was 11.28 ( $\pm 2.57$ ) jaguars per 100 square kilometers. The latter is interesting for its proximity to a community. For the remote Dos Lagunas Biotope we obtained the density estimated was between 2.10 and 4.53 jaguars per 100 square kilometers based on the total MMDM and MMDM/2 respectively. Finally, the estimate for El Burrel was between 12.47 and 24.10 ( $\pm 4.56$ ) jaguars per 100 square kilometers albeit with an exceptionally small polygon, thus serving more as pilot study indicative of potentially high densities. This information is essential to inform the continued conservation efforts of the MBR,

especially in the most threatened sites of this protected area. The size of the Selva Maya JCU combines with good densities of jaguars to make this a very important tri-national stronghold.

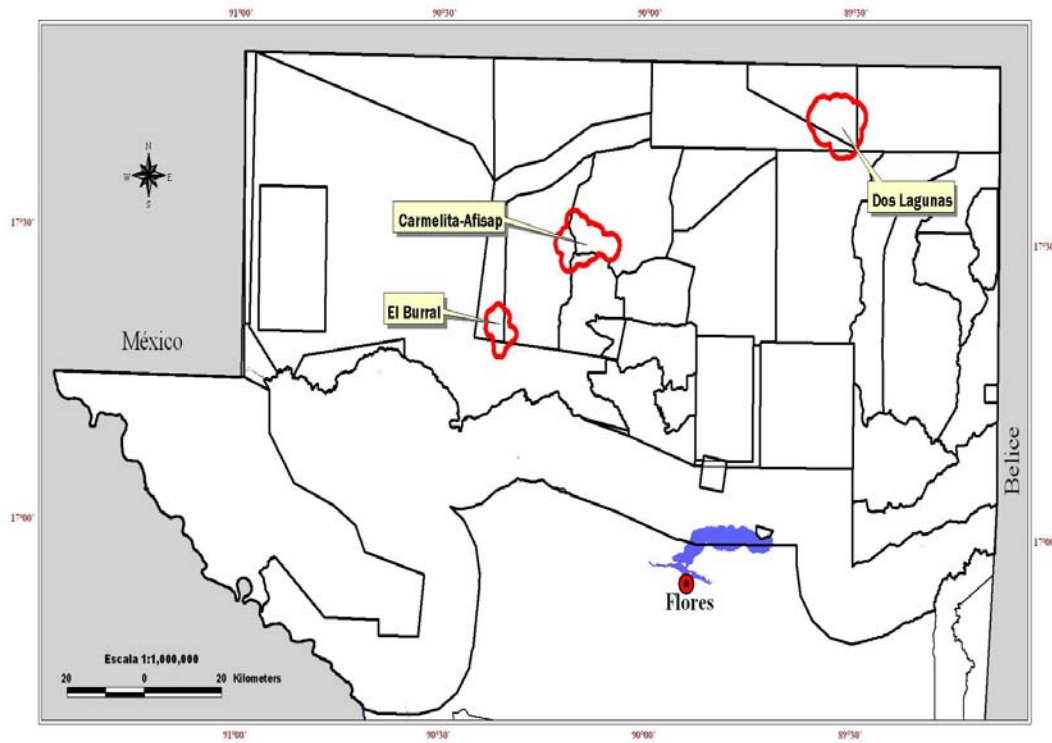


Figure 1. Location of the three surveys (red lines) carried out in 2008 to estimate jaguar density and abundance in the Maya Biosphere Reserve.

### **Interviews in the Montañas Mayas Biosphere Reserve, Xutilha Wildlife Refuge and Santa Cruz Special Protection Area Corridor**

#### ***Abstract***

From July 1-12, 2008 we carried out interviews in the southeast and southwest of the corridor and visited personnel of Fundación para el Ecodesarrollo y la Conservación (FUNDAECO) and Morales Municipality to establish an alliance and support for the validation of the south part of the corridor. The southeast and southwest of the corridor, between Montañas Mayas Biosphere Reserve, Xutilha Wildlife Refuge, and Santa Cruz Special Protection Area are in good condition. There is only a small fragmented area located in the southeast of the Xutilha Wildlife Refuge close to Chimay, Santa Isabel, and Actelá communities. Forest transformation for pasture lands and African palm (*Elaeis guineensis*) plantations are the main threats to the corridor.

#### ***Objective***

To compile information from people who lived and worked in the corridor area and use this information to:

- 1) Establish corridor condition and functionality regarding jaguar mobility, and

- 2) Use as important information for actual and future management plan in the area.

From July 9-11, 2008 we carried out 17 interviews on 13 communities in San Luis, Fray Bartolomé de las Casas, and Nuevo Chahal municipalities. In each community we met with the Auxiliary Mayor to explain the objective of the study and ask for permission and support to conduct the interviews with local people. We tried to interview people that spend most of their time in the forest, for example hunters, xateros, and copal (*Protium copal*) resin tree harvesters. Of 17 interviews, 13 registered direct observation or sign of jaguar, 14 jaguar direct observations and nine jaguar signs were registered (Figure 2 below, and Appendix 4). Sixty-nine percent of the direct observations (n=9) were in the forest and the most recent direct observation of a jaguar was registered one month ago in Kaxlampom community (16p 252000-1778000). In other communities such as Actelá (16p 233000-1758000), where forest has been transformed to cattle pastures and corn fields, the most recent direct observation of a jaguar was registered 20 years ago.

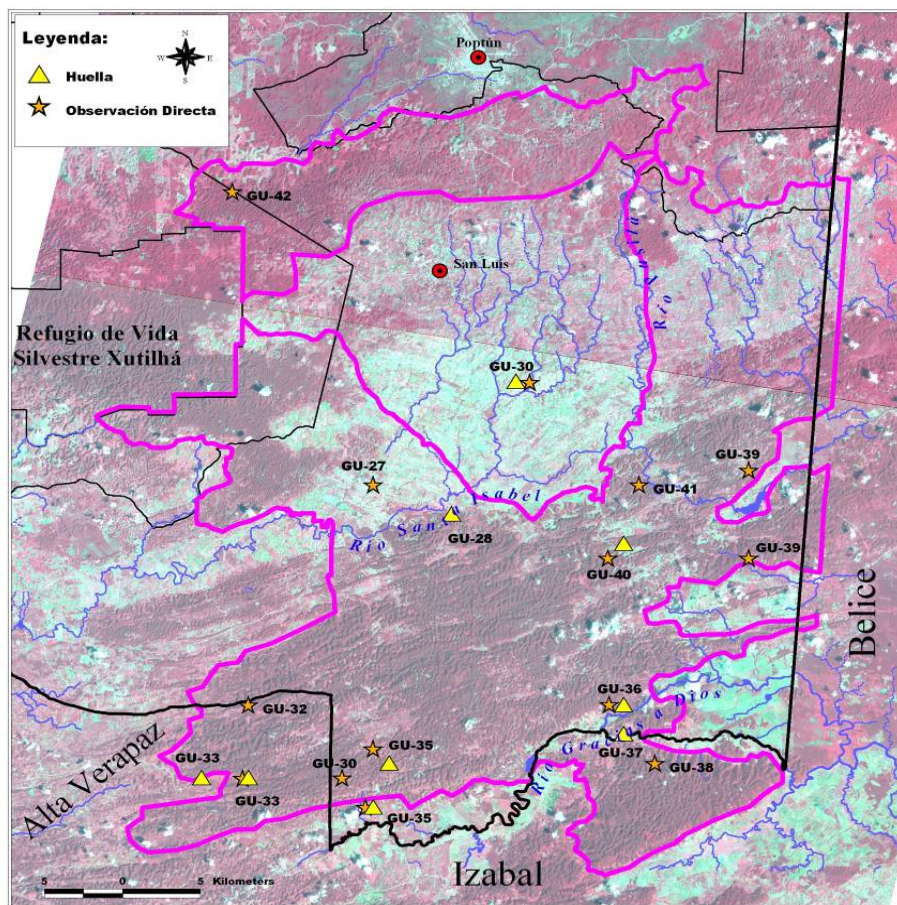


Figure 2. Direct jaguar observations and footprints based on interviews. Yellow triangles represent jaguar footprints and orange stars represent jaguar direct observation.

Most of the communities cultivate corn and beans. In several communities in the southwest of the corridor cardamom (*Zingiberaceae*), cocoa (*Theobroma cacao*), and allspice (*Pimenta dioica*) are also cultivated. Cardamom and cocoa plantations promote

forest maintenance because the plants prosper in partial shade. Maintenance of forest cover is also compatible with the allspice, xate (*Chamaedorea* spp.), and copal resin extraction.

It is worth to mention that the North Transversal road will possibly be asphalted as part of the Puebla Panamá Plan, to connect southeastern Mexico with the Santo Tomas de Castilla Port located in the Department of Izabal. The PADESA Company has an African palm nursery in Fray Bartolomé de las Casas Municipality, Alta Verapaz. In a farm located in Soslá community cattle pastures have been transformed to plant this palm. Thus far, the evaluation of the corridor has produced reason for optimism and some causes for concern.

### **Evaluation of jaguar presence-absence in two corridor fragments in Guatemala: Xutilhá & Santa Cruz**

#### ***Abstract***

The Jaguar (*Panthera onca*) is the largest cat in the Americas and as a top predator, plays a role in the ecological structure of faunal communities where it resides. Reductions in forest cover, the availability of natural prey, and conflicts between human and carnivores are the main causes of the 50 percent reduction in the jaguar's historical range (Sanderson et al. 2002). The Xutilhá wildlife refuge (19,037 hectares) and The Special Protected Area mountain ridge Santa Cruz (89,175 hectares) are two priority zones in the jaguar dispersal corridor predicted by Least Cost Dispersal analyses (Marieb 2006). Xutilhá is a key area of connectivity for jaguars between northern and southern Guatemala and Belize. Sierra Santa Cruz has been considered a Jaguar Conservation Unit (Marieb 2006). While both areas had been evaluated from a distance, including through over-flights in March 2007, it was important to send crews into the areas to evaluate them. This was done as a training exercise, and trainee Lic. Guillermo López now leads the in-Guatemala rancher outreach program under Jose Moreira's supervision. Trainee Victor Mendéz executed the Jaguars Forever workshop in Catacamas, Honduras in September 2008, for the area of Patuca National Park in the Honduran Corazón del Corredor.

The objective of this study was to evaluate jaguar presence-absence through an occupancy survey methodology. Approximately twenty five days of sampling in 20 stations in Xutilha resulted in 590 trap nights in a sample area of 507 hectares. Twenty four days of sampling in 10 stations in Santa Cruz resulted in 250 trap nights in a sample area 62.1 hectares. We obtained no photo captures of jaguars in the study areas and rocky substrates precluded track observations. As comparison, in the community forest management area of Carmelita 20 stations in a minimum convex polygon of 5,089 ha over 45 days yielded 900 trap nights, 27 captures, and 10 individuals; in El Burrel 20 stations in a minimum convex polygon of 2,170 hectares over 38 days yielded 760 trap nights, 97 captures and nine individuals; and in Dos Lagunas, 25 stations in a minimum convex polygon of 2,450 hectares, over 47 days, yielded 1,175 trap nights, 10 captures, and six individuals. Comparing Xutilhá to El Burrel and Dos Lagunas, the area sampled in Xutilha was approximately 24 percent that of El Burrel and 21 percent that of Dos Lagunas, the number of trap nights 77 percent and 43 percent respectively, and the ratios



of individuals captures 11/0 and 6/0. Rocky steep terrain in Xutilhá and Sierra Santa Cruz limited the placement options for camera traps (see Figure 3 to 5 below, and Appendix 5). Even with careful placement that accommodated for optimal jaguar routes no photos were obtained. A disturbance with a nearby community forced an early cessation of the Sierra Santa Cruz sample. Evidence of hunting was present in both sites.

We were unable to document jaguar presence in these areas during the sampling periods. While presence was not documented, neither was absence exhaustively confirmed, nor is it likely. Abundance however does not appear high. The sample in Xutilhá might be considered adequate given the topography. The sampling in Sierra Santa Cruz was not proportionate to its area and cannot be considered conclusive. As in Cerro San Gil in the Department of Izabal, Guatemala in 2007, where the extent of camera trap theft truncated a survey, pre-existing social conditions abbreviated a sampling period. However, such phenomena can be considered results in their own right. The Sierra de las Minas JCU is so rife with issues that we have yet to invest a camera trap survey there. It is likely that none of these three areas fit the requirements for stability that constitute a JCU. That does not preclude them from being important areas in the Mesoamerican corridor. Another factor to consider is steep slopes. Research in the Maya Biosphere Reserve has suggested that jaguars prefer more level terrain for travel. A 2006 survey of Pico Bonito National Park JCU in the Nombre de Dios range in Honduras encountered difficulties in selecting sites (in this area the range rises approximately 2000 meters from the coastal plain) and resulted in no jaguar captures. It is likely that less extreme topography in the Nombre de Dios range is better habitat. Even with that being the case, some of these mountain ranges may be better considered as important parts of the dispersal corridor than JCUs.

In Xutilhá we obtained photo captures of four species of cats reported for Guatemala (*Puma concolor*, *Puma yagouaroundi*, *Leopardus pardalis* and *Leopardus wiedii*) and in Santa Cruz we obtained photo captures of two species of cats (*Puma concolor* and *Leopardus wiedii*). In both study zones we obtained photo captures of 11 mammal and five bird species respectively.

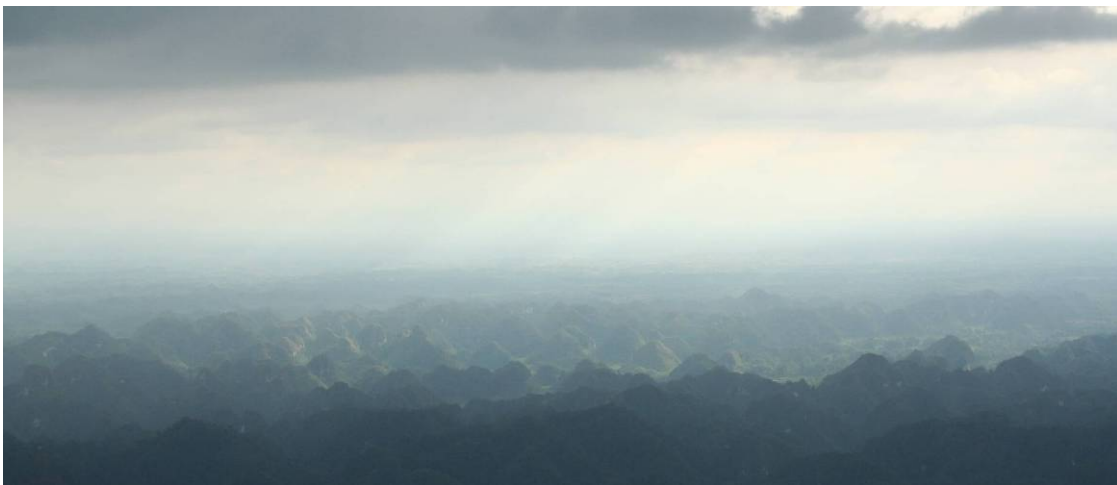


Figure 3. Xutilhá Wildlife Refuge



Figure 4. Machaquila Wildlife Refuge ~ 15 kilometers north of Xutilhá



Figure 5. Sierra Santa Cruz

### **Rancher outreach and conflict mitigation: Phase III**

#### ***Abstract***

Human-jaguar conflicts have been identified as one of the principal threats affecting jaguar populations throughout its range. Conflicts with humans arise when livestock is lost (in many cases due to poor livestock husbandry practices or other carnivore species such as pumas or coyotes) and jaguars are blamed and killed for these losses. Many times jaguars are shot on sight without justification due to a negative perception and fear of this carnivore. Because the jaguar lives at low densities and has a relatively slow-



reproductive rate, even a few individuals lost can have a substantial impact on already dwindling populations. Consequently, gathering data on conflicts between humans and carnivores (stated broadly because many times attacks on livestock by pumas and coyotes are blamed on jaguars) and implementing techniques to mitigate these conflicts are a priority for areas such as the Maya Biosphere Reserve (MBR) where there is considerable overlap between human activities and jaguars.

The Wildlife Conservation Society's (WCS), Guatemala program, began collecting data on human-carnivore conflicts (HCCs) in 2005 to propose conflict mitigation strategies and reduce the negative impact on the threatened jaguar population of the MBR and on the economy of local people. Our project focuses on two types of conflicts: 1) conflicts in cattle ranches on the outskirts of the MBR where cattle is the main type of livestock lost to jaguars, pumas and coyotes, and 2) conflicts in villages within the MBR where domestic animals such as pigs and dogs are lost to jaguars and pumas. Our project was proposed in different phases. During the first and second phases of the project we examined local perceptions, as well as temporal and spatial patterns of HCCs. Our analyses of the data collected so far have allowed us to understand cattle ranchers' needs and willingness to participate in conservation programs and to propose conflict mitigation strategies that may be viable and accepted by the ranchers. We also have a better understanding of HCCs and some of the factors influencing them, and have identified research priorities that will improve our understanding of HCCs in the area, helping us propose more effective conflict mitigation strategies. We are currently initiating phase III, which involves implementing and evaluating the conflict mitigation strategies we are recommending.

Results from our spatial analyses indicate that ranches near large forest tracts and riparian forests are more prone to HCCs. Therefore, we are working in cattle ranches near such habitats and also in an area identified as a potential jaguar corridor. The area proposed is the Yaxha-Belize Maya Mountains corridor, which connects the Maya Forest (the largest Jaguar Conservation Unit (JCU) in Mesoamerica) with a large forest fragment in Belize (also identified as an important JCU). Another added advantage to working in this site is that we have already worked with some of the villagers of the area and have a well established rapport with them. We also continue to work in two forest concession villages located within the MBR, in the multiple-use zone.

From August to December 2008, we followed up on activities proposed in the Rancher Outreach and Mitigation (ROM) project funded by the U.S. Department of State. To prepare for phase III, we printed two documents (one for local people and one for government and NGO personnel, see Appendices 6 and 7) that detail human-carnivore conflict mitigation techniques, and we began contacting cattle ranchers in the proposed corridor study site and the sites previously worked with a high probability of human-carnivore conflict occurrence. In each site we discussed the possible implementation of the recommended conflict mitigation practices in their ranches and villages to evaluate their effectiveness. In order to gain the rancher's trust and cooperation, we have a veterinarian working for us to provide technical advice and assistance to the ranchers in exchange for their cooperation. This is a strategy that we adopted last year and which has

worked well for us (Appendix 8). Following personnel's attendance to the jaguar-livestock workshop in Costa Rica on September 10, we visited ranches that with Asiatic buffalos to better understand the husbandry, productive, and market advantages and disadvantages of this less vulnerable bovid (Appendix 9). It has been an active year rich in observations made and projects initiated (Appendix 10).

Finally, we also designed a HCC monitoring program and are leading a multi-stakeholder group in its implementation (Appendix 11). Through this project, we hope to implement and evaluate model livestock husbandry practices in ranches and villages of areas prone to HCC's.

### ***Polisar Activities***

My role with WCS Guatemala has been as a facilitator and advisor. I facilitated WCS Guatemala staff member's attendance and presentations at the Costa Rica jaguar-cattle workshop, and their proposal to Chester Zoo. They took notes at the Costa Rica workshop and shared their advancements with partners, sent facilitators to assist the Honduras Jaguars Forever workshop, and helped articulate progress made in the Selva Maya for the Liz Claiborne and Art Ortenberg Foundation (LCAOF). This has been a productive two-way relationship.

### ***Department of State***

Most DOS objectives have been met in Guatemala. Ground-truthing has proceeded as expected. All survey objectives have been met. The rancher outreach program continues to advance. There have been multiple education workshops. We did not advance a national event/strategy, favoring of action over planning. Another reason was to wait to identify the best-recommended corridor, and then secure high-level engagement. I can take responsibility for that decision. In early 2008, the relationships among institutions active in jaguar research in Guatemala might have caused development of a national strategy to be laborious and time-consuming, rich in debate, poorer in action. Given that WCS Guatemala now has much better working relationships with The Nature Conservancy and La Defensores de la Naturaleza, that their position as the leaders in jaguar research and conservation in Guatemala is better consolidated, I judge that the wait was a good decision. Developing a national jaguar strategy might still be an effective tool, probably the most effective when consensus is reached on exactly which areas outside the Maya Biosphere Reserve most deserve attention. At present, WCS Guatemala considers the Yaxha-Maya Mountains corridor a priority.

### ***Next Steps***

*Support for WCS Guatemala Jaguar Coordinator Jose Moreira to:*

- Organize field validation activities in Yaxha-Maya Mountains Least Cost Dispersal Predicted Jaguar Corridor, a bi-national (Belize and Guatemala) corridor that would provide connectivity between the two most important Jaguar Conservation Units of the Maya Forest.

- Direct activities of jaguar-domestic animal conflict mitigation work in Carmelita and Uaxactún communities in the Maya Biosphere Reserve, the Yaxha-Maya Mountains Least Cost Dispersal Predicted Jaguar Corridor and the Cansis Abajo Region, which can provide connectivity between the Southern Petén Protected Areas Complex, Guatemala's Sierra Santa Cruz, and the Maya Mountains in Belize.
- Coordinate activities to estimate jaguar abundances and densities through camera trap surveys in the Maya Biosphere Reserve – including the Yaloch El Esfuerzo Forest Concession and the long-term monitoring site El Burrall.

#### *Improving the Habitat Quality Model of the Selva Maya stronghold*

In 2004, WCS began developing a jaguar habitat quality model spanning 86,000 square kilometers of the tri-national lowland forested areas of Belize, Mexico, and Guatemala, commonly known as the Selva Maya. The objectives of this exercise included estimating the size of the jaguar population across the largest forest block and determine which landscape features correlate with robust jaguar populations, and which correlate with jaguar numbers.

The model was developed with input from experts from the three countries. Experts were asked to weigh the influence of habitat and physical environmental parameters on jaguars' abundance.

To date, we have estimated jaguar abundance at six sites within the Guatemalan Maya Forest. In addition, we included Belizean data from Gallon Jug and Chiquibul National Park to evaluate the habitat quality model precision. Results of the first three sampling efforts indicate a high correlation ( $R^2 = 0.97$ ) between density estimates and the selected model parameters.

We propose to update and improve the habitat quality model for jaguars using information from the latest evaluations carried out in the Selva Maya JCU. We are also considering a review of all the information available to determine the model factors that better correlate with capture rates. We will conduct surveys in the east of the MBR, in the Yaloch El Esfuerzo Forest Concession to fill information gaps in the model, and establish El Burrall as a permanent sampling site.

#### *Mitigating human-carnivore conflict*

The next phase of this project includes the continuation of the rancher manual distribution developed for Guatemala in areas with high probability of human-carnivore conflicts. We will work closely with ranchers who are willing to adopt recommended practices, and we will maintain a constant presence to monitor the effectiveness of these practices advising ranchers on ways to intensify livestock husbandry in order to improve their productivity.

We will work areas identified as priority for conflict mitigation and also areas located within the jaguar Yaxha-Maya Mountains Least Cost Dispersal Predicted Jaguar Corridor (53,469 hectares).

These efforts will also continue to focus on two villages (Uaxactun and Carmelita) where we seek to reduce domestic animals predation providing technical assistance to improve domestic animals husbandry techniques while monitoring their effectiveness.

We are distributing a manual on predator damage and prevention techniques designed for decision makers (Wildlife Department, Ministry of Agriculture, and NGOs working in areas with a history of human-cat conflicts) and we have conducted workshops on livestock management techniques for these actors. We will oversee and advise CONAP's (Consejo Nacional de Áreas Protegidas) Wildlife Department in the development and implementation of a livestock depredation policy and program.

*Establishing guard stations in the east sector of the Laguna del Tigre National Park*

Several years ago we identified the need to establish a figurative shield to prevent the threats originating from illegal human settlements established in the Laguna del Tigre National Park from spreading to the remainder of the Maya Biosphere Reserve. The program now physically maintains a line (shield) extending 47 kilometers north-south that contains illegal activities on the western side of this JCU. We will help the Guatemalan government agencies construct two key guard stations/lookout towers (La Corona and El Burrel) to protect the most important JCU in Guatemala. Once established, these points will be maintained by personnel from CONAP, IDAEH, and the Guatemalan Army. Although this activity supports the entire JCU, the areas that will most directly benefit are the Central Biological Corridor (37,763 hectares) and AFISAP Forest Concession (51,902 hectares).

### **3. SELVA MAYA, MEXICO**

In 2008, the WCS LACP program supported and hosted Rafael Reyna Hurtado, a WCS Conservation Fellow who had conducted his dissertation research in Mexico's Calukmul Biosphere Reserve adjacent to Guatemala's Maya Biosphere Reserve, together constituting a massive JCU La Selva Maya (see Appendix 12). With its connectivity to the WCS site in Guatemala, Calukmul is a strategic area in which to expand. We wrote a small amount of survey support into the 2008 JCP LCAOF proposal and with that will facilitate the work of the Mexican program CENJAGUAR in this strategic area.

CENJAGUAR was initiated by Universidad Autonoma de Mexico (UNAM) Mexican researchers Cuautémoc Chávez, Gerardo Ceballos, and Rodrigo Medellín in 2006. Field work was initiated in 2007, and in November 2008, the program convened over 20 Mexican researchers in Morelos to review progress and plan next steps. Polisar was invited to that event by Medellín and one of the field coordinators, Heliot Zarza, but had to decline due to scheduling conflicts.

CENJAGUAR is a national program, organized by six regions, to guarantee the future of jaguar populations and the habitats upon which they depend. It includes long-term monitoring, the development of conservation strategies, environmental education, and sustainable development economic alternatives as indicated by each sites' individual characteristics. The objectives are not only a standardized national census and long-term monitoring, but also improving enforcement, incentives and benefits for local populations, and cooperation between national, regional, and local government, and landowners and conservation organizations. It receives funds from multiple donors within Mexico.

#### ***Next Steps***

With a strong Mexican national program underway and WCS having limited personnel and resources our intent is to: 1) maintain good relations with our Mexican colleagues; 2) contribute to those areas in southeastern Mexico (Tabasco, Campeche, Quintana Roo, Yucatan) that are part of the connected jaguar population which has its core in Guatemala's Maya Biosphere Reserve. This will be restricted to Calukmul in 2009.



## 4. HONDURAS

### *El Paseo*

Representatives from Honduras arrived at the July 2007 Paseo del Jaguar event better prepared than most countries. I had intentionally moved a Guatemala-based, bi-national camera trap workshop to Honduras in June 2007 to cultivate actors in this country whose jaguar corridor seemed to likely be the most challenging. During that meeting I met all the actors who then generated an ambitious, yet reasonable request for support; nearly all the items have been completed.

The Honduran El Paseo priorities were the following:

1. The launching of the Paseo de los Jaguares Corridor in Honduras November 2007 was intended to discuss the project with a broad array of actors, bring together all people interested in working with this project, unite the jaguar corridor with Pro-Corredor and el Corazon del Corredor, and publicize the Corridor. *(This was accomplished in November 2007 with some media publicity, and a nice article in La Tribuna (see Appendix 13, it did cultivate Corazon del Corredor interest; The Pro-Corredor project has been taking longer to start up, so there has been less success there).*
2. Performing studies of the distribution of jaguars in the northwest of Honduras and the center (east) to evaluate viability of corridor and presence-absence of jaguars (ground-truth the corridor). *(This is underway, with advances made that began in WCS, then between Panthera and WCS, and now with Panthera leading).*
3. a. Two environmental education workshops:
  - One in Catacamas – inland area near Patuca National Park *(One workshop was conducted from September through October 2008 with support from World Bank Global Environment Facility funds through Corazón del Corredor project, and DOS funds sponsoring WCS Guatemala facilitators),*
  - One in Brus Laguna – the largest town at edge of Rio Platano Biosphere Reserve, near the coast, *(pending, written into JCP 2009 LCAOF grant with likely Corazón support).*
- b. Workshop with ranchers in La Ceiba - for ranchers in the Caribbean, with the help of Zamorano. After the study of distribution of jaguars hold a large rancher workshop covering much of Caribbean coast, bringing in Rafael Hoogesteijn *(accomplished in September 2008, see Appendix 14 and Appendix 15).* With Zamorano's help I organized a meeting attended by 80 dairy and meat producers from the jaguar corridor to present their priorities and start development of an integrated conservation-development program in jaguar corridor from Sico to Punta Sal – publicized in newspapers and television. *This event was intended as seed to develop a program for ranchers in the corridor).*

4. Investigative jaguar density studies:
  - a. Rio Platano – camera trapping Rio Sicre  
(*This was accomplished, but the results appear grim. We need another to validate, but Rio Platano, or at least the survey area needs remedial work*).
  - b. Corridor zone – Honduran team wants to do a survey in corridor  
*Small areas present likely problems. Tawhka and Patuca are better choices – large yet troubled parts of the Honduran Corazón. Tawahka survey is part of JCP 2009LCAOF grant*).
5. Study and analysis on perceptions and attitudes towards jaguars in the corridor area. We will help determine best actions to take in certain places.  
Sociologist or anthropologist, three different focal zones, could coincide with ground-truthing or be separate. Not yet addressed in the least, except through ground-truthing interview data. (*Honduran leaders questioned me about this July 2008. My reply was to wait until the corridor is identified and then engage with actors. Postpone, but address*).

#### ***Polisar Activities***

In addition to negotiating and facilitating camera trap surveys in Rio Platano Biosphere Reserve, I advised investigator Franklin Casteñeda and consulted with Franklin regarding conservation in Rio Platano and east in Departamento Gracias a Dios.

We negotiated a Jaguars Forever workshop for residents of Patuca National Park, which was ultimately dropped by WCS Department of Education and picked up by the Hondurans motivated by Carla Carcamo and funded by Juan Pablo Suazo (Corazon) with facilitators (Giovanni Tut and Victor Mendéz) coming from WCS Guatemala September 30<sup>th</sup>-October 2<sup>nd</sup>. We also smoothed out misunderstandings that developed between Honduran partners and WCS.

We also cultivated interest in Zamorano in coordinating a workshop to integrate ranching and conservation concerns. We established a plan, requested a proposal from them, executed event with their support and that of the Cattlemen's Association of the Atlantic and the Centers for Milk Collection and Cooling. The one day event included presentations by Zamorano faculty, myself, Rafael Hoogesteijn, priority setting exercises, attendance by 75-80 people (mostly ranchers) reported national newspapers and television (see attached Appendices 14 and 15). Afterwards visited several ranches, and met Jaime Rosenthal, owner of a ranch along Rio Coco near Bosawás. The event held on September 3 was designed to be a stage-setter/endorsement for future proposals for integrated ranching and conservation, sustainable agriculture, and jaguar friendly ranches.

Our team urged ground-truthing crews including both WCS and Panthera personnel to maximize progress in Caribbean plains of northern Honduras. This made it possible to tentatively identify the corridor and then invite the ranchers from in that corridor to the

September 3<sup>rd</sup> workshop. By August we had a draft map produced by Kathy Zeller of where the area was from which we could identify and invite ranchers.

I wrote a flight plan for Lighthawk that covers the Rio Coco Corridor, Patuca National Park, Tawahka Biosphere Reserve, Rio Platano Biosphere Reserve, with flights scheduled for March 2009

I discussed potential additional surveys and educational workshops with Juan Pablo Suazo (Corazon), Carla Carcamo (forestry and wildlife agency – now named Instituto Conservacion Forestal (ICF)) and Franklin Casteñeda (ICF and UN).

### ***Department of State***

The Honduran Paseo priority actions coincided with DOS objectives. Ground-truthing proceeded as planned, and we completed two surveys with DOS support Rus Rus and Rio Platano. We initiated rancher outreach work and an education workshop was delivered in partnership with El Corazón. The country has embraced the jaguar corridor and is ready for more activities.

### ***Next Steps***

The first priority is follow-up on WCS-Panthera-Zamorano start-up workshop with dairy and meat producers in Honduran Caribbean corridor (see Appendix 14).

Our second priority is to capitalize on Corporacion Dinant's good will and volunteering of their land to dedicate some funds and a junior researcher to evaluate the fauna of large and small African palm plantations. Corporacion Dinant has 13,000 hectares of this land use type which we have found in major patches all the way through Honduras and down through Nicaragua, many of which lie directly in the predicted and validated jaguar corridor. We still do not have a factual data based evaluation of mammal use of these habitats stratified by: 1) stage of plantation; 2) size of plantation; 3) proximity to natural forest blocks. Many of the ranchers attending our event September 3 in La Ceiba have small palm plantations which could complete the study design. This is a logistically easy project lending itself to better study designs than we usually execute and could provide results useful for informing the jaguar corridor throughout much of the Neotropics. If we could dedicate significant funds for this, it will make an excellent Zamorano training project, having easy access sites with a bite-sized randomized block design.

The third priority is to re-evaluate jaguar and protected area status Rio Platano, evaluate jaguar and protected area status Patuca National Park, and aggressively initiate rancher outreach and education and pilot projects in the multiple use areas of both areas.

Ranking fourth, and part of JCP 2009 LCAOF grant, is to start outreach among ranchers in the Rio Coco Corridor. The Honduras side of the heart of the Mesoamerican Biological Corridor, along the Rio Coco, has been rapidly cut and converted to cattle ranching on steep slopes. Many of the landowners are presumably absentee and some possibly quite wealthy and powerful. However steep, this hill has to start to be climbed, one step at a time.

The fifth priority is to achieve input from long-term, experienced senior conservationists to work with Honduran protected area and conservation agencies and indigenous associations towards improved indigenous and campesino tenure systems and protected area function. The current status quo in Honduran Mosquita has led to agricultural invasions at a rate far higher than across the Rio Coco in Nicaragua. Inadequate land rights systems and governance constraints have contributed to these limitations.

## 5. NICARAGUA

### *El Paseo*

In late July 2007, Raomir Mazanarez, Secretario General of Nicaragua's Ministry of Natural Resources and Environment (MARENA) and I decided to organize a Nicaraguan National Paseo del Jaguar event in-country. Danilo Saravia, Coordinator of Conservation and Sustainable Use of Natural Resources of the Central American Comisión for Environment and Development, encouraged the idea, and Jacobo Sanchez, Director of the Technical Secretariat of Bosawás (SETAB MARENA) assumed the role of organizer. On January 31, 2008 we held the first session of the Nicaraguan National Committee for Jaguar Research and Conservation (see Appendix 16). Twenty-seven representatives covering a variety of administrative and conservation concerns spanning Nicaragua's Caribbean coastal plain were in attendance. Carlos Mejia of the Ministry of Environment and Natural Resources (MARENA) Dirección de Biodiversidad was named Committee Coordinator and me the Executive Secretary. During the event we received information from groups representing the following areas: 1) Bosawás Core and NE of reserve; 2) Bosawás Buffer Zone and NW of reserve; 3) Corridor between northern and southern JCU; 4) Southern JCU- the Rio San Juan Biosphere Reserve. In subsequent discussions, Carlos Mejia and I agreed that our first priority was to establish the location of the jaguar corridor, and subsequently to engage with the actors with interests in those areas.

In late February 2008, Kathy Zeller and Roberto Salom conducted flights with Lighthawk over the least cost dispersal predicted corridor. I accompanied the flights one day and Carlos Meijia the next. The plan to start ground-truthing the corridor in 2008 was postponed to allow for certain personnel to become free of obligations in early 2009. Said personnel renewed their alternative commitments in Costa Rica, and ground-truthing is now due to start on approximately February 15, 2009 with Roberto Salom, Leonardo Maffei, and with Sandra Mercedes Hernandez Potosme in the area between Wawashang and Cerro Silva. Sandra is the new ground-truthing candidate Panthera will be exploring for a longer term hire. There remains approximately \$17, 627 to allocate to ground-truthing the Nicaragua corridor, which is to be augmented by DOS funds (See Table 1 on page 30).

The Committee for Jaguar Research and Conservation can supply institutional allies the length of eastern Nicaragua and provides increased efficiency in obtaining authorizations.

### *Polisar Activities*

A list of my activities that advanced WCS engagement with the Nicaraguan portion of the Corazón del Corredor Jaguar Conservation Unit (JCU) follows.

- Facilitated LACP Assistant Director, Anton Seimon's reconnaissance of Bosawás, and meeting with key partners March 2008.
- Met with leaders of three indigenous territories within the project that I formerly supervised as they transformed into an officially recognized, nationally integrated regional government, titled Regimen Especial de Upper Wangky (Rio Coco).



Listened to their concerns regarding about their issues with some uncontrolled elements Honduran side of Rio Coco. The Liz Claiborne and Art Ortenberg Foundation proposal was partly designed to address these bi-national concerns.

- Set in motion WCS Legal Representative in Nicaragua duty-free camera trap importation facilitated by the WCS Legal Representative in Nicaragua to support the Department of State scheduled camera trap survey in Indio-Maiz 2008. This turned into the worst importation in the JCP survey program history as she went on her one month vacation with the units still in customs and rainfall increasing, thus delaying the Indio-Maiz survey approximately eight months, and forcing (domino effect) cancellation of Wawashang survey.
- Met Director of Centro Humboldt (CH) and leaders of ADEPCIMUSUJIN and discussed indigenous association of Miskitu Indian Tasbaika Kum (MITK) discussing plans for a Jaguares para Siempre education workshop, and biodigesters in Bosawás. The Jaguares para Siempre workshop was planned as an add-on to a three-territory CH-Department of Education teacher training program (over 100 teachers). Subsequently the Department of Education decided against an extra three days for jaguars, CH was embarrassed, but I suspect we can do this on smaller scale in 2009.
- Met Karin von Lobenstein of Cooperación Técnica Alemania (GTZ) to discuss history of GTZ in Bosawás, and likely priorities. Through subsequent meetings, including a round table at SETAB in June and a personal meeting in July, further refined GTZ is interests.
- Submitted a conceptual draft proposal for six year project to GTZ in October 2008. Focus on two territories in east side of Bosawás, near the mining triangle of Bonanza-Siuna-Rosita. Since I lacked personal contacts in these territories, and knowledge of logistics and budget considerations, I met their leaders to introduce the project, explore their interest, listen to their priorities, and discuss the monitoring program.
- The final proposal is now in process to inventory and monitor jaguars, white-lipped peccaries, tapirs, spider monkeys and forest floristics/timber resources in two indigenous territories, one national park, and two natural reserves in northeast Nicaragua. Between this monitoring program and the existing alliances we will have some influence in approximately 5,900 square kilometers, with the goal of improving jaguar densities in this entire area.
- Drafted a deliverables-based service contract as strategy to circumvent a WCS hiring freeze so that committed funds could reach field allowing Fabricio Diaz Santos to start executing objectives starting in January 2009. More funds and activities will follow.

## *Department of State*

The DOS objective of national endorsement of the jaguar corridor was obtained. Ground-truthing the Nicaragua dispersal corridor, which was planned for November 2008, has been delayed until 2009 for reasons outlined above, and projected to start February 2009. The 2008 Indio-Maiz survey was postponed to early 2009, as described above. The Wawashang survey, scheduled for early 2009 will have to be cancelled due to domino effect described above. In Nicaragua's premier cattle ranching areas (Chontales, Boaco, Chinandega) jaguars are already eliminated. Thus it was not a priority country for additional DOS rancher outreach work. We may yet encounter issues to address along the Caribbean coast. The Honduran partners sponsored a Jaguares para Siempre educational workshop internally near Patuca National Park and we contributed WCS Guatemala facilitators supported by DOS funds. We may yet similarly execute a DOS supported Jaguares para Siempre workshop along Rio Coco in Bosawás in 2009. An extension of the grant for two quarters is needed to execute all the above.

## *Next Steps*

Wawashang still merits a survey if social conditions near the reserve will allow one to be conducted.

The Rio San Juan Biosphere Reserve adjacent to key areas in Costa Rica merits a formal jaguar evaluation and action plan. We have allies in MARENA and we should get a comprehensive sense of enforcement capacity and jaguar status in more areas there than just the upcoming survey sample. A second survey may be merited depending on results of first.

We want to help indigenous territories of Bosawás prevent uncontrolled elements such as deforestation, uncontrolled hunting, and other illegal activities that originate in Honduras from crossing the Rio Coco.

We also want to work with communities in Bosawás on better pig management to reduce conflicts with jaguars. Subsistence hunting in Bosawás is facilitated by dogs, which are sometimes ambushed in the forest by jaguars. Preventing hunters from becoming angry about losing hunting dogs cannot be completely prevented. The use of dogs will continue, as will the losses. Pig management in forest communities is difficult, but it is a priority. We should assist more Jaguares para Siempre workshops in Bosawás and link them more to domestic animal management/conflict reduction.

We would consider one more survey in Bosawás to validate the previous two, but only if it is a very large grid spanning the linked conservation zone crossing four indigenous territories.

During the national event we received reports of jaguars from the southwest edge of the Bosawás buffer zone to river forests not far from Waspam and Puerto Cabezas on the coast. That is a broad swath of territory. There is no doubt that there are some daunting

challenges in this area, but these outer boundaries should not be ignored when ground-truthing. Centro Humboldt is working with funds from the European Union in the Municipios of Wiwili and San Jose de Bocay on sustainable agriculture (small cattle operations, pigs, cacao) which might provide access to the campesinos in those areas, the two groups being the Asociación de Campesinos Protectores de Bosawás (Acaprobo) and the Asociación para el Desarrollo de las Comunidades Mestizas de Bosawás (Adecomebo). These buffer zone contacts could presumably be pursued via Centro Humboldt (office in Managua). The researchers at Centro de Endimientto de la Naturaleza, which sits below the tepui-like Macizo de Peñas Blancas on edge of Bosawás buffer zone (Allan Bolt and Edgar Castillo) could likely provide logistical platform. Eduardo Perez Soto of the Puerto Cabezas (Bilwi) from the campus of Universidad de las Regiones Autonomas de la Costa Caribe del Atlantico de Nicaragua (URRACAN) attended our event in 2008 to represent Jadder Lewis, Director of the Institute of Natural Resources, Environment and Sustainable Development IREMADES URRACAN who was listed on the committee. These institutions have the potential to help support ground-truthing in the greater Bosawás area.

## 6. COSTA RICA

### *El Paseo*

The list from the Costa Rican delegation at El Paseo included the following items:

1. Monitoring in the Osa Peninsula;
2. Status of jaguar populations in Cordillera Volcanica Central, Maquenque Mixed Wildlife Refuge, Barro Colorado National Wildlife Refuge, Tortuguero National Park (contiguous areas in northeast Costa Rican and ~ contiguous with Nicaragua);
3. Monitoring in the Talamanca mountain range;
4. Surveys to see if jaguar populations in the JCU's are as stable as they seem;
5. Study the relationship between the movement of prey species due to climate change and movement of jaguars;
6. Improve Costa Rican capacity to address jaguar - cattle conflict management.

The items selected by the JCP all focused on consolidating the successfully ground-truthed and recommended Barbilla Corridor sub-corridor of the Cordillera Volcánica Central-Talamanca Corridor. Those items were:

1. Land use and tenancy in the sub-corridor Barbilla in the Cordillera Volcánica Central-Talamanca (focus on private lands to clarify tenancy and potentials for payments for environmental services (PSAs following Spanish initials Pagos para Servicios Ambientales) \$8,020 to Fundación Neotropica – consultant
2. Pilot study: reducing conflicts between humans and jaguars in the Nari Awari Indigenous Reserve, Barbilla Corridor \$8,620 to Roberto Salom
3. Jaguar and prey monitoring in the Barbilla Corridor, \$14,980 to Roberto Salom.

The total of the above is \$23,600 to Roberto Salom, and \$8,020 to Fundación Neotropica, for \$31,620 Panthera Paseo funds to Costa Rica.

As writing the project in Nari Awari is underway and progressing (see Appendix 17), the monitoring project is pending (see Appendix 18), and the land use study has begun.

### *Polisar Activities*

My activities in Costa Rica in 2008 consisted of the following:

I helped negotiate the Panthera fund priorities of:

1. Land use study in Barbilla Corridor (contracted to a consultant);
2. “Suid Security” project (live fences and bio-digester);
3. Large mammal monitoring project in the Barbilla Corridor. I spent time reviewing and advising proposals for all three. I also accomplished an efficient passage of Panthera funds through LACP for these projects as an LACP orientation and evidence that Panthera funds could be passed with agility.

In June 2008, I helped introduce the WCS-Panthera transition in Costa Rica. I met Mario Coto, Coordinador, Programa Nacional de Corredores Biológicos, Sistema Nacional de Areas de Conservación (SINAC), Ministerio de Ambiente y Energía (MINAE), and Olivier Chassot and Guisselle Monge, Center for Tropical Science. In these interactions I provided an unqualified WCS endorsement of Panthera and Roberto Salom, thereby improving comfort levels in Costa Rica regarding the transition. I met Mario Boza to clarify capabilities of office in San Jose. Having him meet with Roberto Salom provided helpful orientation when we passed DOS rancher outreach funds into Costa Rica via WCS for a workshop on jaguar-livestock issues in September 2008. Roberto Salom and I met Jose Joaquin Calvo Domingo, Coordinador, Autoridad Administrativa CITES, Chief Vida Silvestre, SINAC MINAE to discuss jaguar-livestock issues. We also met Ronit Maxit, Director of the program Jaguar y Puma en Fincas Ganaderas, Programa Jaguar, Universidad Nacional Costa Rica, and students in the program: Carolina Sáenz, Bolaños, Elias Jose Gordillo Chávez, Isabel Cristina Cepeda López. In these meetings we tried to ascertain the status of these issues, capabilities of the institutions, and set in motion a plan for the September workshop to cover and advance those issues.

I corresponded with personnel involved with Tropical Forest Conservation Act Agreement debt swap Funds (CI and others managing the process) to keep abreast of the calendar.

With help of Roberto Salom (Panthera) and Mario Boza (WCS) we organized a one-day international/national workshop on jaguar-ranching conflicts and problem management in San Jose September 10 with scheduled presentations by Roberto Salom (Panthera Costa Rica), Rafael Hoogesteijn (Panthera – Brazil), Jose Soto (WCS – Guatemala), and George Hanson and Bart Harmsen (Panthera – Belize), and Ronit Maxit of Programa Jaguar (Costa Rica). The attendance included approximately 50 members of conservation agencies, animal rescue centers, conservation organizations, and others. The series of presentations at the meeting provided working examples from South America, Guatemala, Belize, and Costa Rica of patterns observed in jaguar-livestock issues, including how to identify problems and address them in terms of ranching practices. Rony Garcia and Jose Moreira attended from Guatemala and provided rough notes which Roberto Salom refined (see Appendix 19). The meeting of jaguar-focused field staff from Guatemala, Belize, Costa Rica, and Venezuela was one of the most successful parts of the event: providing opportunities for the sharing of insights about study designs, jaguar attacks, cattle management, and the comparative performance of different brands of field equipment. However, the weak attendance by ranchers and the Ministry of Agriculture and Ganaderia was a disappointment. Programa Jaguar was charged with engaging this sector, and gave us such notice regarding the anticipated low attendance by these important actors that we could not address the issue adequately. Natalia Guerrero (Corporación de Fomento Ganadero -Corfoga-) represented the perspective of Costa Rican ranchers, and did so well by defining the status of issues and needs (see Appendix 19). There is a lot of work yet to do to improve inter-institutional communication and public-private coordination for constructive responses to jaguar attacks on livestock and methods to manage and reduce these problems in Costa Rica.



In late December, WCS initiated a Tropical Ecosystem Assessment and Monitoring (TEAM) program in the Osa Peninsula, in collaboration with Friends of the Osa. This was part of a 20 site package coordinated by Tim O'Brien with Conservation International. The program will begin in July 2009, run up to five years, employ several people, and include climate monitoring, botanical monitoring, and vertebrate monitoring via camera trap grids. This also provides a potential platform for advancing general wildlife conservation and jaguar conservation in the Gran Osa.

### ***Department of State***

All DOS objectives have been met in Costa Rica. We began quickly on the pilot corridor in April 2007. That successful exercise in methods-testing subsequently became part of Costa Rica's national system, also fulfilling the goals of the DOS policy and local engagement component for high-level endorsement of the jaguar corridor. Survey objectives are also being met (see Appendix 20). A Jaguars Forever environmental education workshop was delivered in 2008, and we initiated work on jaguar-ranching conflict issues in 2008 (see Appendix 19).

### ***Next Steps***

WCS would also like to deliver technical assistance for the National Biological Corridor System for monitoring. Costa Rica's corridor specialists Joel Saenz (University of Costa Rica) and Gustavo Induni National Protected Area System (SINAC) of the Ministry of Energy and Environment (MINAE) requested guidance on developing a landscape monitoring program for indicator species, which WCS has the technical expertise to provide.

We are interested in evaluating the population status and seasonal movements of jaguars in the Tortuguero Stronghold (Tortuguero National Park, Barra Colorado National Wildlife Refuge) contiguous with the Rio San Juan Biosphere Reserve in southeast Nicaragua – ostensibly all one jaguar population. We would also like to focus specifically on mitigating jaguar-livestock conflict in the area near Tortuguero.

## 7. PANAMA

### *El Paseo*

Panama's short-list at El Paseo in July 2007 resembled a large family's shopping excursion. When Alan Rabinowitz stated that the JCP had \$1.2 million to spend, our partners Autoridad Nacional del Ambiente (ANAM) and Sociedad Mastozoologica de Panamá Somaspa, made an immediate calculation by dividing that figure by the number of countries in the room, and thus determining the total of their ask. When these high expectations were not curtailed, I visited the partners in December of 2007 and adjusted their expectations to "something below" \$100,000, in the neighborhood of \$80,000. I subsequently worked on tempering the high expectations of the Panamanian partners to match the JCP's priorities and limits, while also representing the Panamanian's interests. Substantial firm negotiations were required to tailor a program of full JCP satisfaction.

My last visit in Panama was to sign an agreement for WCS, but the trip also served as the fulcrum for near final decisions on what items the JCP would support with Panthera funds. At that point the draft items agreed upon were:

- 1) Shipping 40 camera traps, valued at \$2,000 to The Smithsonian Tropical Research Institute (STRI);
- 2) Support for a Panama Jaguar Program Launch, totaling \$4,000;
- 3) Two camera trap surveys totaling \$15,000:
  - a. Chagres II - To access a less trammelled site and validate the first survey (made in fairly compromised area), and
  - b. Santa Fe - To push the partners away from the tendency to focus on Chagres and Darien and start to evaluate areas west of the Canal,
- 4) A wildlife use (hunting) study in Chagres, \$3,000;
- 5) A vehicle to be shared among Somaspa and ANAM partners, \$16,000;
- 6) Fuel and maintenance for the vehicle, \$2,000;
- 7) Varying proportions of Ricardo Moreno and Melva Olmos' time as lead technicians and representatives of the jaguar program, totaling \$27,000;
- 8) Accounting support for \$1,800;
- 9) Overhead at \$4,000.

I gave this information to Panthera and they added \$5,000 for ground-truthing the budget I had negotiated. The total of approximately \$72,800 became approximately \$77,700. I understand that Melva Olmos is now the point of contact for Panthera.

My visit in April 2008 was brief, but I focused on trying to ascertain how one could leverage private funds in Panama. Panama City's level of commerce presents a very marked contrast with cities like Managua or Tegucigalpa, making me curious how one could raise the profile of the jaguar program to leverage the apparent Panama internal funds. I interacted with Adrian Benedetti, Director of Parque Municipal Summit, who was working on an inauguration of his zoo's jaguar exhibit Mundo Jaguar. Ultimately that did not achieve the desired goal. I also met with Zulieka Pinzón, Executive Director of Fundacion para la Conservacion de los Recursos Naturales NATURA, who can be

reached at 507.232.8773 (t), 507-232-7616 (f), or [zpinzon@naturepanama.net](mailto:zpinzon@naturepanama.net). Zulieka is one of the most solid actors I met in Panama. We discussed NATURA's role in the Tropical Forest Conservation Act (TFCA) debt swap agreements (Chagres and Darien) as administrator of the funds generated. ANAM manages the allocations. The Chagres funds (Fondo Chagres) are likely to diminish over time, and the Darien funds are likely to increase. Decisions are made in the oversight committee composed of ANAM, The Nature Conservancy (TNC), and NATURA, using management plans. The TNC Parks in Peril (PIP) program funded Somaspa to design the "Measure of Success" biodiversity monitoring of Chagres, i.e. TNC helped drive jaguar conservation in Chagres. The Darien management plan was not as developed in April 2008. It has a more general site conservation focus; however an updated plan was anticipated. Someone inside ANAM could push for a higher quality management and monitoring plan in the Darien and more inclusion of jaguars.

If the private sector has not been courted in Panama, I would urge exploring that more. Perhaps Panthera representative Melva Olmos can focus on the possibilities of the Darien's TFCA plan if it is still in flux. Of all the sites in Panama, the Wildlife Conservation Society would be most interested in the Darien due its size and biologically strategic location, but that is not foreseen in the near future.

## **8. SOUTH AMERICA**

I met WCS country and site program managers from South America in December 2008. With 295,000 square kilometers of conservation landscapes in Brazil, Ecuador, Peru, Bolivia, and Venezuela these sites and particularly their WCS management staff, are the logical stage for a more cohesively coordinated JCP in South America. A strategic questionnaire for these staff has been prepared with circulation pending. All the above countries are priorities, with Venezuela being the most junior, and thus perhaps needing the most and first strengthening. The vast Caura landscape is a high priority. In the future, JCP may hire a regional jaguar field coordinator to be based in one of the region's powerful Andes-Amazon country programs.

## **9. SURVEY PROGRAM**

During 2008 I supervised Leonardo Maffei's activities. We examined patterns in the survey data base, and will be cutting new ground in 2009. For a summary of recent surveys with those of 2008 highlighted, please see Appendix 21.

## **10. ADDITIONAL 2008 POLICY, DEVELOPMENT, AND PERSONNEL FOR JOHN POLISAR**

- Presented Paseo del Jaguar to Department of State (Assistant Secretary level, multiple Bureaus and two WCS VPs), Washington, DC (PowerPoint).
- Presented Paseo del Jaguar to Bureau of Western Hemisphere Affairs in Office of Economic Policy and Summit Coordination, Washington, DC (PowerPoint).
- Presented Jaguar and Bosawás projects to DOS Environmental Cooperation point of contact in Nicaragua's Ministry of Environment and Natural Resources.
- Presented Paseo del Jaguar to Economic Officer, US Embassy Nicaragua (PowerPoint).
- Presented Paseo del Jaguar, with Roberto Salom to the Regional Environmental Hub Director and Assistant in the U.S. Embassy in San Jose.
- Presented update on Paseo del Jaguar to CCAD Environmental Coordinator Danilo Saravio July in Honduras, Tegucigalpa (PowerPoint).
- Drafted briefer for USG Department of State.
- Periodically kept in contact with Department of State personnel from Bureau of Oceans and International Environmental and Scientific Affairs regarding possibilities for additional funding.

- Clarified transition of leadership/responsibilities for Department of State during transition as Panthera personnel departed WCS.
- Met Geraldo Segura, Coordinator, Proyecto Corazon, Global Environmental Facility, World Bank in Washington, DC, presented the Bosawás-Corazon project, presented Paseo de Jaguar (Power points), linked the two.
- Met Hensington Bayardo, Coordinator, Proyecto Corazon, Nicaragua, presented Bosawás project, presented Paseo del Jaguar (Powerpoints).
- Met Honduran partners Jorge Restrepo (Zamorano), Carla Carcamo (Instituto Conservacion Forestal), Juan Pablo Suazo (Corazón – Honduras), Leonardo Lanza, Direccion de Biodiversidad, Secretariat de Recursos Naturales (DIBIO SERNA) – reviewing goals and progress.

#### Development:

- Drafted interim strategy document for JCP.
- Created summary documents for Liz Claiborne and Art Ortenberg Foundation.
- Worked with various WCS staff of preparation of LCAOF proposal submitted October 2008
- Cultivated relationships in countries that led to internal funding, e.g. Juan Pablo Suazo funding Jaguars Forever in Honduras.
- Met WCS Development personnel: Carolyn Gray, Kathryn Reidy, Nicole Baker, Cherie Wasoff, Susan Tressler, and Rachel Vinyard. Subsequently prepared detailed background documents that in November 2008 shared with Development.
- Helped WCS Guatemala apply to the Chester Zoo for ROM, with approval arriving on December 19<sup>th</sup>, the same day as LCAOF approval
- Cultivated other donors, working on difficult balance between being key actor in many in-region implementations while also advancing strategic programmatic development.
- Drafted materials for Linde Ostro to submit to Bert Kerstetter to explore his interest in supporting JCP November 2008.
- Worked with LACP Anton Seimon, Friends of Osa Adrian Forsyth, Aida Bustamente, and Ricardo Moreno to develop budget and workplan for Tropical Ecosystem Assessment and Monitoring (TEAM) project in Corcovado National Park that Tim O'Brien packaged with 20 other sites to submit to Conservation International December 2008.

### Personnel:

- First quarter 2008 worked with Kathy Zeller and Roberto Salom on establishing priorities, study designs, and reviewing activities. Frequently served in advisory capacity for Roberto Salom who I interviewed and hired in 2007 for WCS ground-truthing and survey operations. Both are now in Panthera.
- First quarter worked with Great Cats personnel reviewing activities in Belize and remainder of Isthmus, working on refining Paseo priorities and executing DOS objectives.
- Reviewed and guided Leonardo Maffei's work. One objective was to have him trained as an additional ground-truthing support for the Zeller-Salom team. Send him to Honduras not only to assist surveys but also assist ground-truthing. Contacted Michael Painter regarding split responsibilities Moore Amazon-South America and Mesoamerica for Leo, and planned priorities. Subsequently guided Leo on JCP activities in reports to donors.
- Reviewed expenses and advised WCS Guatemala program in various ways.
- Worked with Anton Seimon, Zachary Feris, Rafael Reyna, Raquel Diaz, and Alexandra Rojas as the Jaguar Conservation Program rapidly transitioned from a Science and Exploration/Great Cats support and implementation system to Latin America and Caribbean.
- Maintained productive relationships with Panthera field personnel Zeller, Salom, Hoogesteijn. Contacted Panthera Western Hemisphere Felid Coordinator Howard Quigley to discuss WCS and Panthera projects and priorities for most complementary outcomes.

## 11. FINANCIAL REPORT FOR PANTHERA FUNDS

Table 1. Summary of expenses from May 2007 to present.

Component	May 2007 to April 2008	May 2008 to present
Staff Salary/Benefits (Hunter & Trujillo)	10,322	44
Belize Jaguars	15,625	5,250
Rancher Outreach Program (Brazil Pantanal)	12,988	
Contract Staff: Corridor Project	121,723	
Nicaragua 07 Bosawas Survey Expenses		4,553
Guatemala Sierra Santa Cruz & Xutilha Evaluations		18,197
Guatemala Jose Moreira salary (May-Dec 2008)		8,000
Costa Rica - Nari Awari conflict reduction, Monitoring, Landuse		31,670
<b>TOTAL</b>	<b>160,658</b>	<b>67,715</b>
Total Revenue	250,000	
Total Expenses to-date	228,373	
<b>Remaining to be spent</b>	<b>21,627</b>	

### Legend for table:

Expenses include salaries and benefits for Great Cats personnel, Belize jaguar contract costs, rancher outreach in the Brazilian Pantanal, contract staff costs, and a late charging to a 2007 survey, corrected in 2008.

Costa Rica allocation of \$31,620 as follows:

- Fundacion Neotropica: Land use and tenancy in the sub-corridor Barbilla in the Cordillera Volcánica Central-Talamanca \$8,020
- Roberto Salom, Panthera: Pilot study: reducing conflicts between humans and jaguars in the Nari Awari Indigenous Reserve, Barbilla Corridor \$8,620
- Roberto Salom: Jaguar and prey monitoring in the Barbilla Corridor, \$14,980

WCS Guatemala allocation of \$30,197 as follows:

- Training in action - the evaluation of presence/absence of jaguars in two important corridor fragments in Guatemala: Xutilhá and Sierra Santa Cruz \$18,197
- Salary for Jose Moreira, May 2008-April 2009, WCS Guatemala jaguar POC and coordinator, \$12,000 (\$8,000 paid, \$4,000 remaining)

Remainder of \$21,627 of which \$4,000 will be allocated to Chepe's salary January-March, and \$17,627 to Nicaragua ground-truthing, to be augmented by DOS CAFTA DR grant 35979 9JC25.

## **12. JAGUAR CONSERVATION REPORT APPENDICES REFERENCE LIST**

Appendix 1 – Densidad de Jaguares dentro de la Concesión Comunitaria de Carmelita y de la Asociación Forestal Integral San Andrés Petén, Guatemala

Appendix 2 – Densidad de Jaguares en el Biotopo Protegido Dos Lagunas, Parque Nacional Mirador Rio Azul, Petén, Guatemala

Appendix 3 – Abundancia de Jaguares en El Burrel Corredor Biológico Central, Reserva de la Biosfera Maya: Estimación Invierno 2008

Appendix 4 – Entrevistas en el Corredor entre Reserva de la Biosfera Montañas Mayas, Refugio de Vida Silvestre Xutilhá y el Area de Protección Especial Santa Cruz

Appendix 5 – Validación de la presencia de Jaguares en dos fragmentos importantes de su corredor en Guatemala: Xutilhá y Sierra Santa Cruz

Appendix 6 – Conviviendo con el Jaguar, guía para ganaderos

Appendix 7 – Guía para la identificación y prevención de depredación

Appendix 8 – Programa de Monitoreo y Mitigación de Conflictos entre Carnívoros y Animales Domésticos

Appendix 9 – Informe de Visita a Finca “Santo Espíritu” con Hato Mixto Bovinos-Búfalos

Appendix 10 – Confirmación de un caso de conflicto entre Jaguar y Ganado en la región de Cansis Abajo: Corredor del Jaguar Montañas Mayas – Santa Cruz

Appendix 11 – Taller Programa de Mitigación de conflictos entre humanos y carnívoros

Appendix 12 – La Selva Maya of Northern Guatemala and Southern Mexico

Appendix 13 – La Tribuna: Crean corredor para protegerlo en zona norte hondureña

Appendix 14 – Sustainable Agriculture: Jaguar Conservation and Cattle Production in the Honduran Mesoamerican Biological Corridor

Appendix 15 – La Prensa: Ganaderos a proteger al jaguar en Honduras

Appendix 16 – Paseo del Jaguar en Nicaragua

Appendix 17 – Reducing conflicts between humans and jaguars in the Nari Awari Indigenous reserve, Barbilla Jaguar Corridor, Costa Rica 2008



Appendix 18 – Jaguar and prey monitoring in the Barbilla SubCorridor, Costa Rica

Appendix 19 – Taller Nacional sobre el Conflicto entre Felinos Grandes y Ganado en Costa Rica

Appendix 20 – Surveys – Paseo del Jaguar Corridor

Appendix 21 – Advances in Jaguar Surveys, Jaguar Conservation Program, 2007-2008