

PASEO DE LOS JAGUARES/PATH OF THE JAGUARS
SUMMARY OF THE REGIONAL (MEXICO THROUGH PANAMA)
PRIORITY SETTING WORKSHOP



July 19-20 Hotel Bougainvillea, Costa Rica

In late July 2007 a unique group of 46 government officials and conservation professionals from ten countries assembled for two days to launch a Mesoamerican jaguar corridor with the objective of maintaining connectivity among jaguar populations from southern Mexico through Panama. The meeting was convened by the Wildlife Conservation Society's Jaguar Conservation Program (WCS JCP) and the Central American Commission for Environment and Development (CCAD). The meeting's primary objective was to assist jaguar range country government and professional personnel in the development of national action plans for the implementation of the jaguar corridor.

CCAD had already blessed the jaguar corridor, with their unanimous approval, at the Ministerial level in April 2006. The purpose of the July 2007 meeting was two-fold: 1) to introduce the biological foundations of the corridor and the scientific tools of the jaguar conservation program to the next level in regional governments – the directors of agencies who would make decisions upon which the fate of the jaguar would be decided; 2) to work with those same decision makers over two days to help them define and express their most urgent priorities to advance the corridor in their countries. Thus, Directors of Wildlife Management, Protected Areas, and Biodiversity agencies from throughout the jaguar range countries of Mesoamerica convened in Costa Rica July 19-20, 2007 to set priorities for jaguar conservation.

This represented a unique point in large cat conservation. The JCP had developed a solid scientific rationale for a corridor of connectivity that fell within the framework of the CCAD supported Mesoamerican Biological Corridor (MBC). The CCAD recognized that the jaguar corridor strengthened the focus of the MBC. Years of survey and mapping research by the JCP had suggested the next steps to take geographically and topically to advance the corridor. Through funds provided by the U.S. Department of State, the Panthera Foundation, and the Liz Claiborne Art Ortenberg Foundation the JCP was now poised to advance the corridor through palpable on-ground implementations. Before commencing, it was critical to share openly and develop alliances with the national governments in the region, to hear, without prejudice or influence, what actions each nation's

environmental leaders considered most urgent and worthy of support. While most of the intact jaguar populations in the region fell within reserves and protected areas, many of the prospective corridors traversed a diverse mosaic of private lands.

Throughout the meeting the group recognized that this was an initiative that would demand extensive public involvement and support. Effective implementations at the local level would be essential for national and regional success. Enhanced human and jaguar co-existence would be critical to maintain the corridor of connectivity among jaguars from Mexico to Panama. The event included guest speakers and focused national exercises and presentations. In two days, the event proceeded from introductions to short lists of national priorities (see Module 3).

OPENING RECEPTION WEDNESDAY 7:00-9:30 PM JULY 18

Ing. Ronald Vargas Brenes, Executive Director of Costa Rica's National System of Conservation Areas (SINAC) presented an opening address at the evening reception July 18. Representing the Vice-Minister of the Ministry of Environment and Energy (MINAE), Ing. Vargas spoke of the regional significance of the jaguar, the traditional awe and respect it has commanded, the reverence of the Maya toward Balam, the jaguar, and the unique opportunity to maintain, in perpetuity, one connected population of jaguars the length of the Central American Isthmus.

It was a lively evening in an elegant salon decked with JCP maps of Jaguar Conservation Units and Least Cost Dispersal analysis projected jaguar corridors, but the event began in earnest the following morning.

WELCOMING SPEECHES AM JULY 19

The meeting began in earnest the following morning with opening speeches by key political allies from across Central America. Attendance from the countries was very strong, with 3-4 government agency leadership personnel, and one long-term WCS partner and allied investigator representing each country

Guatemala's Minister of Environment Juan Mario Dary Fuentes opened the event as the CCAD's new acting president. Minister Dary commented on the importance of research feeding decisions and policy, for team work, and the integration of the local actors, trade, and industry in conservation solutions

Danilo Saravia, CCAD Coordinator for Conservation Strategies and the Sustainable Use of Central America's Natural Resources also represented the San Salvador-based CCAD's endorsement of the jaguar corridor.

Marco Vinicio Araya from Costa Rica's National System of Protected Areas (SINAC) followed Mr. Saravia, paying respect to Guatemala's Minister of Environment, Juan Mario Dary, who was attending as part of the Guatemalan delegation, and President of the CCAD. Mr. Araya's speech focused on the importance of education, the need for research findings to reach decision makers, and the value that a nation's investment in education represents for its future.

Architect Sergio Veliz Rizzo, Executive Secretary of Guatemala's National Council of Protected Areas (CONAP) introduced the assembly to the Jaguares Sin Fronteras (Jaguars without Frontiers) an initiative for a Regional Strategy for Jaguar Conservation in the Tri-national (Mexico-Guatemala-Belize) Selva Maya.

Carlos Manuel Rodriguez, former Minister of Environment and Energy (MINAE) Costa Rica, an ally of the jaguar corridor since its inception, and currently with Conservation International, spoke on the need for integrated energy and protected area conservation policies, the dangers of incentives that discourage conservation, and the importance of institutionalized incentives that encourage biodiversity conservation.

MODULE ONE: THE JAGUAR CONSERVATION PROGRAM AND THE PASEO DE LOS JAGUALES

Dr. Alan Rabinowitz, Executive Director, Science and Exploration, Wildlife Conservation Society introduced the background and objectives of the Paseo de los Jaguares, and the structure and expectations of the regional workshop. He provided a brief history of jaguar research and the birth and development of the JCP. Dr. Rabinowitz outlined the thematic areas of the JCP's work: population status and distribution surveys; population monitoring and long-term ecological research; jaguar-livestock research and rancher outreach; genetics and health; education and policy. He emphasized the importance of the jaguar's prey and habitat, while noting the emergence of reports of jaguars from human modified landscapes.

Most importantly, recent morphometric and genetic studies have indicated that there has been virtually no historic separation among jaguars throughout the species long range from the arid range lands of the southwestern United States and northern Mexico through Central American and Equatorial humid lowland rainforests and into northern Argentina. These studies have made it obvious that jaguars have been traversing from one forested redoubt to another, and with adequate frequency to maintain a high degree of genetic interchange.

Dr. Rabinowitz asked: Why settle for conserving discrete populations when it is possible to maintain the connectivity and protect the jaguar from Mexico to Argentina?

One of the accomplishments of the JCP has been to identify and examine Jaguar Conservation Units (JCU), areas where jaguars are still relatively abundant and secure due to a stable prey community and habitat. This was done through iterative mapping and interview exercises that started in 1999 and have been repeated and refined since. The objective of the jaguar corridor is to maintain connectivity between the JCUs. The JCP has now modeled a permeability matrix in which jaguar movements through a landscape are predicted. Parameters such as land cover class, percent shrub and tree cover, elevation, human population density, distance to roads and settlements are used to predict which areas would represent obstacles to jaguar movement, resulting in predicted paths where the hypothetical resistance to jaguar movement is minimal. This results in maps that show possible routes between JCUs.

In April 2006, at the Second Mesoamerican Congress on Protected Areas the Regional Minister's of the Environment formally supported CCAD and WCS JCP collaboration to advance this scientifically projected jaguar corridor. The next steps started with this regional workshop Paseo de los Jaguares: ascertaining national priorities for actions to maintain jaguar connectivity, conducting in-country workshops to engage national and local leaders and interest groups, and stepping up surveys, ground-truthing, conflict mitigation, policy development and education.

Kathy Marieb, WCS JCP, introduced the theory and methods that have generated regional and national-level maps of Jaguar Conservation Units and their connecting Corridors. She described how connectivity can reduce extinction probabilities by enhancing genetic diversity and avoiding inbreeding depression in small isolated populations. Enhanced dispersal, frequently a result of exploratory movements by "adolescent" jaguars will reduce extinction rates. She explained the analytical processes used to generate the corridor maps, and the next steps needed to test the projections. Ms. Marieb described the components of the least cost dispersal analysis that predicted potential corridors between JCUs. These Least Cost Corridors (LCCs) offer dispersing jaguars the least restrictions, the most security, and the best chance of successful travel between JCUs.

The next step is "Ground-truthing" which will check the LCCs to determine if jaguars are using the predicted area for dispersal and to collect data through interviews and site visits. The process of identifying jaguar corridors begins with satellite imagery, but requires on-ground visits to validate. Through interviews in local communities, the status of prey base, jaguar presence, land use, future development plans, and attitudes towards

jaguars are ascertained. This is followed by field visits to areas predicted to be rich in prey and feasible pathways for jaguars. The tools used are sign (tracks, feces, scrapes) and genetic analyses of recovered stools. During ground-truthing local and national planners are involved and informed. Ground-truthing in a pilot corridor between Costa Rica's Cordillera Central Volcanica and the Talamanca range began with several weeks of interviews and meetings in April and May 2007. That field work was continued, with a team from National Geographic, immediately following the Paseo de los Jaguares workshop.

Dr. Archie Carr III, former WCS Director for Mesoamerica and the Caribbean and architect of the USAID funded project Paseo Pantera in the late 1990s, which spawned the multi-national lending institution supported Mesoamerican Biological Corridor (MBC), provided the group with some history of Paseo Pantera, the MBC and the way that the jaguar corridor fits in the foundations laid. The Paseo de los Jaguares follows the general geographic path of these previous corridors. The jaguar corridor will add an emphasis on species biology, the ecosystem services needed to maintain that species, ground-truthing the corridors, and a consciously active engagement with all levels and sectors of society to determine the mutual interests that will advance human-jaguar coexistence. Dr. Carr provided a much-needed history of the strong legacy upon which the jaguar corridor builds.

Dr. John Polisar, Coordinator of the WCS Jaguar Conservation Program provided an overview of the JCP work in livestock-rancher issues. Since losses of livestock to jaguars play a large role in the public's distrust towards jaguars, it is critical to work with farmers to reduce losses and thus gain more public acceptance of the big cats. This will mean working with the full spectrum of livestock owners, from small operations with a few animals to large ranches. Personal contact with farmers is important, to understand the issues and work with them to increase livestock production and reduce losses. The JCP has a history of work on these issues in the large ranches of South America, and is eager to bring the expertise to Central America. Pilot projects are currently underway in Guatemala and Belize with more planned for the remainder of the countries. Polisar mentioned upcoming projects, and the need for the public to stop indiscriminate shooting at cats because: 1) its certain that only a small fraction of jaguars are inherently problem cats; and 2) indiscriminant shooting can wound healthy cats that subsequently become problem cats searching easy domestic prey. He spared further details since his colleague Rafael Hoogesteijn, DVM and ranch manager from Venezuela was scheduled to give a 45-minute evening presentation.

Leonardo Maffei, JCP Survey Program Coordinator introduced the audience to camera trap surveys, density estimates, and monitoring. Maffei discussed the range of research methods available to study jaguars and the factors that make camera traps a useful tool for relatively short-term studies that provide an evaluation of jaguar abundance in an area. He demonstrated how jaguars have recognizable individual markings and described the theoretical capture-recapture models used to generate abundance estimates – with photographs of individual cats representing “captures”. In order to make the audience of agency directors understand planning camera trap studies he described the time and space requirements, some of the assumptions, and labor considerations in study design. Surveys can also be repeated over time yielding information on demography, dispersal, and changes in abundance. The JCP survey program has worked for standardized field methods among all surveys, and holds centralized training workshops, individual training in the field, lends equipment to researchers and has methods manuals posted on the web. WCS JCP facilitated camera trap surveys are underway in multiple JCU's of every country in Mesoamerica during 2007-08.

Nalini Mohan, Wildlife Conservation Society's Education Department, introduced the curriculum of the **Jaguars Forever** educational package. Mrs. Mohan emphasized that the WCS Education Division, the regional Latin American and Caribbean office, and the Jaguar Conservation Program were working together to deliver the Paseo workshop, and to deliver educational programs in the field. She described the Jaguars Forever curriculum's components of culture, biology, and science and conservation processes which is usually used to train school teachers and environmental education specialists, who then share it with a larger number of recipients. The curriculum has been deployed with success in Guatemala, Costa Rica, and Panama, and

subsequent training workshops are planned for Nicaragua and Honduras. Nalini made certain that workshop attendees understood that WCS Education Division was seeking partners to implement Jaguars Forever workshops in Costa Rica, Nicaragua, and Honduras.

Lunch July 19

CAVU – Flight and Film staff Jordan and David Smith gave an exhibition of **El Darien**, a short film describing indigenous lifestyles and threats to the natural habitats of the Darien, one of Mesoamerica's premier wild areas. The largest wild forests in Mesoamerica are: 1) the Selva Maya, which stretches from Montes Azules Biosphere Reserve in La Selva Lacandona of Chiapas, Mexico, across the entire northern band of Guatemala's Petén in the Maya Biosphere Reserve, north into Calakmul Biosphere Reserve in Mexico's Campeche and Quintana Roo, and south and east into vast private reserves and the Maya Mountains Biosphere Reserve in western Belize; 2) the Corazon del Corredor, which spans from the Rio Platano Biosphere Reserve in Honduras through Bosawás Biosphere Reserve in Nicaragua; and 3) the Darien. Of all the above the Darien is perhaps the most mysterious and least known. Film, television, and the news media are effective communication tools. The Jordan's film was rich in imagery depicting the cultural and biological diversity of the Darien, the threats it faces, and its critical role in the jaguar corridor.

MODULE TWO: RANGE COUNTRY PRESENTATIONS PM JULY 19

Prior to the workshop all the representatives from each of the seven countries had been asked to prepare a presentation about current jaguar status in their nations, which would include the following subjects:

1. Legal status and protection of jaguars;
2. National options regarding the solution of problems related to cats;
3. Agencies and sectors that manage jaguars in each country;
4. Management levels of lands where jaguars exist (land uses);
5. Status of jaguar habitats: Imminent threats and conservation opportunities;
6. Gaps in jaguar knowledge. Is jaguar status based on real data, anecdotal data, or perceptions?
7. What are the perceived needs and/or obstacles to jaguar conservation for the future?

Each country had been asked to select speakers that would take 30 minutes for the presentation and 10 minutes for comments, questions and answers. The countries came prepared with very comprehensive Power point presentations that addressed the above questions. The sequence of countries and their speakers the afternoon of July 19 was as follows: Mexico; Belize; Guatemala; Honduras; Nicaragua; Costa Rica; Panama. These comprehensive presentations, which lasted into the early evening, focused the national teams and informed the entire audience.



AFTER DINNER PRESENTATIONS PM JULY 19

Rafael Hoogestieijn, DVM, MS, Ranch Manager – Estado Apure, Venezuela provided a 45 minute presentation on reducing conflicts between jaguars and cattle. Mr. Hoogestieijn brought data and personal observations stemming from a long career that has combined jaguar conservation and hands-on ranch management. Some of the principal points were the following: 1) working with ranchers is key to reducing jaguar mortality; 2) most ranches can improve livestock production AND reduce cat predation on livestock through improved management. In many instances simple improvements in cattle management can translate into increases in production that reduce the impact of isolated depredation events ; 3) control of problem jaguars has to be focus on the specific jaguars creating issues for ranchers – not every jaguar will have conflicts with livestock; 4) in addition to better livestock management, maintenance of an adequate natural prey base provides felids with sustenance and hence options; 4) options for ranches to consider also include ecotourism and the predation resistant Asian water buffalo, which is very popular in the savannas of Venezuela; 5) ranchers need to see evidence of a coherent public-private program to control jaguars who are causing substantial losses or their faith and hence collaboration with conservation efforts may waver.

Hoogestieijn exhibited data collected on ranches showing the effects of improved management and the use of buffalo to increase production and reduce losses. His talk included 21 points on how ranchers could improve management. Despite the late hour, the talk generated considerable enthusiasm and interest. Questions and discussions flowed as participants perceived real world solutions to reduce problems common throughout the jaguar's range.

Olivier Chassot, Research Coordinator, Tropical Science Center, Costa Rica described the establishment of a section of the Mesoamerican Biological Corridor, the Maquenque Wildlife Refuge that links protected areas in northern Costa Rica and southern Nicaragua. Olivier was reporting on the processes involved in creating this corridor, also called San Juan-La Selva, which initially focused on green macaw habitat needs but has much broader implications and benefits. His talk started with the science generated by WCS researchers and others that indicated a need for the corridor. Critical food resources and habitats, migratory patterns, and spatial requirements of green macaws helped define the corridor. Additional parameters were land use patterns, soil capabilities, forest cover and fragmentation, and the presence of wetlands. What ensued was a persistent collaboration among twenty institutions, coordinated by two full-time employees, with monthly meetings oriented towards concrete actions and national and international visibility and support. The objective has been to maintain connectivity between the biological reserve Indio-Maiz in Nicaragua and the complex of protected areas in the Central Volcanic Range in Costa Rica to conserve the diversity of the humid tropical forest. This required development of a management plan generated through participatory processes that engaged local stakeholders. The project has a monitoring system in place, and despite formal legal status as the National Mixed Wildlife Refuge Maquenque, is still in evolution. It has benefited from Costa Rica's institutionalized payments for environmental services, by which private land owners can receive payments for retaining or recuperating forest cover. Ten years of extensive public-private collaboration over ten years have resulted in a project with legal, social, and financial credibility that is perhaps the best manifestation of a section of the Mesoamerican Biological Corridor.

MODULE THREE: NATIONAL PRIORITIES FOR ACTION – JULY 20

AM: Each country's working group was provided with maps from the corridors and asked to discuss the following issues to identify the national priorities in terms of areas, key actors, and actions to be taken:

- a) Which are the critical areas in terms of potential loss of connectivity, and which are the most important to maintain connectivity;

- b) Who are the principal actors in each country and how could they participate and help;
- c) Science, surveys and investigation, including ground truthing;
- d) Implementation: how to encourage stakeholders to apply innovative strategies on public and private lands;
- e) Problem jaguar management. What are the critical issues to be addressed?

The national teams were provided approximately two and a half hours during the morning of July 20 to prepare a summary of what they considered the most urgent actions needing support in their countries. The emphasis was on national priorities and concrete future actions – what next and with whom?

Before the groups separated to set to work, Alan Rabinowitz and John Polisar reiterated their interest in receiving a short list of actionable items at the end of the exercise. Prior to the meeting the participants had received materials from the WCS JCP requesting that they consider their priorities before arriving and some teams clearly had.

The groups distributed themselves throughout the gorgeous gardens and grounds of the Hotel Bougainvillea and set to work on short lists. The results were presented from late morning through the end of the day. An abbreviated summary of each country's report follows in the sequence and format in which they were presented.

GUATEMALA

Juan Mario Dary, Ministry of Environment and Natural Resources (MARN) and acting President CCAD

Hiram Ordoñez Chocano, National Council of Protected Areas (CONAP)

Sergio Vilas Rizzo, National Council of Protected Areas (CONAP)

Alba Nidia Pérez, Ministry of Environment and Natural Resources (MARN) Mesoamerican Biological Corridor

Roan McNab, WCS Guatemala



Critical areas in terms of potential loss of connectivity- Potential loss of connectivity in:

- Laguna del Tigre (NW)
- Protected areas south of Peten (Machaquila, Xutilja) which compose 86% of the protected areas along with protected areas in Izabal
- Sierra Santa Cruz

Most important areas to maintain connectivity of corridors:

- Gap Polochic-Santa Cruz
- Gap Cumbre Alta-Sierra de las Minas
- Gap Santa Cruz-Xutilja Mountains
- Gap Sierra Caral-Cerro San Gil

Studies to develop:

- How to minimize jaguar-cattle conflict
- Presence and abundance of jaguars in critical areas with no data
- Use of fragmented areas by the jaguar (establish connectivity criteria for Guatemala; i.e. the case of Laguna del Tigre; these criteria are being defined with Mexico)
- It is important to have a training program for personnel.

In country actors that can work for jaguar conservation:

- National Council of Protected Areas (CONAP)
- Ministry of Environment and Natural Resources-Mesoamerican Biological Corridor (MARN-CBM)
- SEGEPLAN-OCRET
- Ministry of Agriculture and Husbandry-National Forest Institute (MAGA-INAB) and other associations
- Universities; i.e., University of San Carlos (USAC), DIGI, CONCYT, CONAP
- WCS, TNC, CI
- Association of Natural Forest Reserves (they are numerous in buffer areas and had strengthened the protected areas system; will have an important role when dealing with jaguar-cattle conflict)
- Association of Forestry Communities of Peten (ACOFOP) and the communities which are members (they have given forestry grants in approximately 463.000 ha; they are regulated by a management plan, thus it has helped to protect wildlife)
- FDN, FUNDAECO, FUNDARY (the latter works in Punta Manabí, in the border with Honduras)
- Association for the rescue and conservation of wildlife (ARCAS), zoos, FMZ and private collections (when dealing with animal confiscations)
- Municipalities and agencies who co-administer protected areas

Conservation initiatives outside protected areas and incentives to encourage local cooperation:

- Corridor design and implementation (there is a map that shows where the corridors should be but there is no plan to make them real)
- Payments for environmental services
- Strengthening the PINBIO (Incentive to Conserve Biology Program)
- Search for funding for PINBIO and for the payments for environmental services
- Strengthening the co-administrators (not all the co-administered areas guarantee protection; there should be greater control on how these agencies manage the resources)

National priorities and needs to deal with the conflict between jaguars and people:

- Make a working group with institutions (there is a political will for this but the responsibility lies in CONAP)
- Gathering of basic and relevant information
- Make pilot projects to evaluate their success
- Identify sources of funding for long-term projects (funds should be oriented to existing projects; i.e. Jaguares sin Fronteras)

Priority investments

JCP-KAPLAN

1. Consolidate protected areas under threat: Laguna del Tigre, Santa Cruz
2. Develop a national plan for jaguar conservation
3. Establish a program to implement measures in farms with jaguars killing livestock (study the effect of these measures; join these efforts with funding from JCP-CAFTA)

JCP-CAFTA

1. Scholarships to capacitate national personnel to deal with the problems
2. Studies about presence of jaguars in key areas with no data:
 - Sierra Santa Cruz
 - Machaquila; Xutilja

COSTA RICA

Mario Coto Hildago, National System of Conservation Areas (SINAC) – Biological Corridor

Marco Vinicio Araya, National System of Conservation Areas (SINAC) – Protected Areas

José Joaquín Calvo Domingo, National System of Conservation Areas (SINAC), Wildlife Management

Gustavo Induni, National System of Conservation Areas (SINAC), Protected Areas

Magally Castro, National System of Conservation Areas (SINAC), Protected Areas

Mario Boza, ProParques and Wildlife Conservation Society

Eduardo Carrillo, National University of Costa Rica

Olivier Chassot, Center for Tropical Science



Populations:

The best populations coincide with Jaguar Conservation Unit Areas. However, the Nicoya Peninsula area, needs more research before it can be considered a JCU. Also, more information is needed in Tortuguero, near the border with Nicaragua.

Threats:

Hunting: of prey species as well as jaguars

Land use patterns outside of park, plantations and monocultures

Jaguar cattle conflicts

Climate change is a possible threat

Critical areas in terms of loss of connectivity:

1. within the Osa peninsula
2. Cordillera Volcanica Central-Talamanca corridor
3. Maquenque Mixed Wildlife Refuge (San Juan-la Selva Corridor)
4. Within the Guanacaste JCU (seasonal dry forest region in NW Costa Rica)

Loss of connectivity is stemming from urbanization, and building of houses, roads, infrastructure.

Research/Institutional Needs:

- 1) Monitoring in Osa
- 2) Status of jaguar populations in Cordillera Volcanica Central, Maquenque Mixed Wildlife Refuge, Barro Colorado National Wildlife Refuge, Tortuguero National Park
- 3) Monitoring in the Talamanca range
- 4) Surveys to see if jaguar populations in the JCUs are as stable as they seem
- 5) Need to study the relationship between the movement of prey species due to climate change and movement of jaguars
- 6) Jaguar –Cattle Conflict Management:

Need to create a national institution where we can compile data on depredation and where jaguars are being killed. Right now the places we know of that have conflicts are in: the Osa, Tortuguero, Cordillera Volcanica Central, and between Nicaragua and Guanacaste. Once this information is compiled we can begin a research and mitigation program related to cattle-jaguar conflict (subsequent to workshop the Costa Rican Wildlife Department expressed the desire to carry the torch on cat-cattle conflict reduction and management)

Organizations:

MINAE/SINAC, Municipalities, Instituto Costarricense de Electricidad I.C..E, Technical Committees of Biological corridors,
Public and Private Universities – to help implement research and education programs, Network of private protected areas, NGOs, Tourism Associations, Cattlemen's Associations, local institutions like COVIRENAS, Ministry of Public Security, Indigenous Communities, Minister of Education

Initiatives for multiple use landscapes:

Payments for Environmental Services (incentives for forest conservation)-- exists

Payment for having wildlife on property -- proposed

Model forests program -- exists

Private protected areas -- exists

Environmental education – festivals, pride campaigns, dissemination of information. We can do this in a novel way to get people's attention and get them interested in jaguar conservation and corridors. For example, a jaguar car to patrol some areas, festivals like the ones that Olivier Chassot and Guisselle Monge of the Tropical Science Center have held for their corridor that have been successful, the international year of the jaguar for the region, where there is a different host country each year.

Needs:

1. Reduce hunting pressure on jaguars and prey.
2. Keep a constant monitoring program of jaguars and prey in the JCUs to keep informed on status.
3. Training programs in cattle-jaguar mitigation at local and national level, similar to what Rafael Hoogesteijn presented. Need to identify conflict areas and provide training at the national level.
4. Enforcement of laws needs to be strengthened.
5. Training for park personnel.
6. Unify what is being done across the country to be consistent.

PANAMA

Aleida Salazar, Director of Protected Areas and Wildlife Management, National Environment Authority (ANAM)

Dario Luque, Director of Biodiversity, National Environment Authority (ANAM)

Israel Tejada, Biodiversity, National Environment Authority (ANAM)

Rafael Samudio, Sociedad Masozoológica de Panamá, SOMASPA

Julieta Samudio, Sociedad Masozoológica de Panamá, SOMASPA



Prioritized geographical areas:

1. Alto Chagres
2. Darien
3. La Amistad

Basic information needed:

1. Cerro Hoya
2. Santa Fe
3. Cope

Priority activities:

Research :

1. Density studies - in prioritized sites Alto Chagres and Darien;
2. Distribution and conservation assessment - in prioritized areas Cerro Hoya, Santa Fe and Cope
3. Wildlife studies – hunting patterns and prey abundance in priority sites
4. Movement behaviour – radio-telemetry in prioritized areas Alto Chagres and Darien
5. National assessment of jaguar-cattle rancher conflict –
6. Characterization of the jaguar –cattle rancher conflict in Alto Chagres

Personnel:

1. Hiring of a total of four park rangers for two protected areas: Palo Seco (2 rangers) and Santa Fe (2 rangers)
2. Salaries for technical personnel (2 biologists) and administrative personnel (1 secretary/accountant) in SOMASPA
3. Local field assistants (from the neighbouring villages to the research areas)

Transportation:

1. Three 4 x 4 pick-up vehicles and maintenance (ANAM and SOMASPA)

Training:

1. Three workshops on wildlife management for field personnel (RBLA-Santa Fe; Alto Chagres-San Lorenzo; Darien)
2. Two camera-traps workshops (Darien, RBLA-Santa Fe)
3. Two jaguar cattle rancher conflict workshops (Darien, RBLA-Santa Fe)
4. Support with basic equipment for parks/reserves
5. Three jaguar research small grants
6. Two scholarship grants for graduate studies (Masters and/or Ph D)

Education::

1. Three Jaguars forever workshops (Darien, PILA-Santa Fe, Portobelo-San Lorenzo)
2. Educational Materials – manuals, brochures, posters, films.

Coordination:

1. Establishment of a task force for jaguar conservation.

Office Facilities:

1. Establishment of an office/laboratory area for the Panama Jaguar Conservation Program.
2. Support to establish a data base jaguar center.

HONDURAS

Carla Carcamo, Director of Wildlife, Administration Honduran of Forestry Development (AFE-COHDEFOR)

Juan Pablo Suazo, Director of Biodiversity, National Secretariat of Natural Resources and the Environment (SERNA/DIBIO)

Nereyda Estrada, Administration of Honduran Forestry Development (AFE-COHDEFOR)

Jorge Ivan Restrepo, Director, CCAD Regional Institute for Biodiversity, Director, Zamorano Center for Biodiversity

**Launching of the Paseo de los Jaguares Corridor in Honduras by October-November 2007****1A. Launching**

- a. Discuss the project with a broad array of actors
- b. Receive proposals
- c. Get commitments

- d. Bring together all people already aligned and interested in working with this project
- e. Unite the jaguar corridor with Pro-Corredor and el Corazon del Corredor

1B.Promotion/Public Affairs

- a. Create mechanisms for sharing information with public
- b. Above includes communication using the media

2. 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

- a. In the center of Honduran coastal plain there are 3 protected areas proponed between Pico Bonito National Park and Rio Platano Biosphere Reserve
- b. Need to learn more about jaguars in these areas and between Pico Bonito and Guatemala
- c. Thinking of breaking up the corridor area into blocks to tackle this and have teams for each block
- d. Need this to find out viability of corridor area
- e. Start field work with Honduran teams in October-November, Honduran wants field work to start immediately after the launching.

3. Outreach and education

a. Two environmental education workshops

- 1. One week long in Brus Laguna – largest town at edge of Rio Platano Biosphere Reserve, near the coast
- 2. One week long in Catacamas – inland area near the Tawaka, Patuca, Platano complex
Idea for above is to include people from Patuca, Tawahka, teachers, and cattlemen. Honduran team liked idea of combining, in sequence Jaguars Forever curriculum with a Cattle Outreach and Mitigation presentation/workshop. Primary emphasis of above Env Ed but indigenous and cattlemen of vast NE Honduras do need to be reached. Honduran team expressed great interest in Nalini Mohan's participation in education workshops.

b. Subsequent workshops as extensions of the above – Jaguars Forever curriculum presented in communities by personnel trained in the item 3a. Honduran team expressed great interest in having Rafael Hoogesteijn involved with Cattle Outreach and Mitigation workshops.

- b. **Workshop with ranchers** in La Ceiba in May 2008. THE workshop for ranchers in the Caribbean. With the help of Zamorano. After the study of distribution held a large rancher workshop covering much of Caribbean coast, bringing in Rafael Hoogesteijn.

Investigations. Related to Item 2 above

2b. Jaguar density studies in

- 1. Rio Platano – camera trapping Rio Sicre
- 2. Corridor zone – Honduran team wants to do a survey in corridor – best to wait till its scouted out a bit better

2c. Study and analysis on perceptions and attitudes towards jaguars in the corridor area. Will help determine best actions to take in certain places. Sociologist or anthropologist, three different focal zones, could coincide w ground-truthing or be separate.

Actors:

SERNA/DIBIO

AFE-COHDEFOR

PROYECTOS DE COOPERACION – MEANING CORAZON AND PRO-CORREDOR

OTHERS:

- a. CCAD Regional Institute for Biodiversity IRBIO, at la Escuela Panamericana de Agricola Zamorano

- b. ENA
- c. UNAH
- d. Rehdes
- e. Municipalities
- f. Educators
- g. Tourism Associations
- h. Private Business
- i. Local organizations (Masta and others)
- j. Non-government Associations—Association Patuca, Modawi

Notes re large cooperative initiatives:

Pro-Corredor: European Union support to strengthen protected areas in the north (along the Mesoamerican Biological Corridor), institution building and de-centralization to put more management authority and actions in municipalities. Primary components are protected areas and connectivity. It had not started, precise foci yet to be determined, will start in Aug-September. There may be considerable overlap between Pro-Corredor and Jaguar Corridor, w biological monitoring included in Pro-Corredor agenda.

El Corazon del Corredor: World Bank Global Environment Facility Funds. \$12 million over six years between Honduras and Nicaragua (\$6M/6years each country). Focused on the cross-border bi-national Biosphere Reserve Corazon del Corredor, which includes Rio Platano, Patuca, and Tawahka on Honduran side and Bosawás on the Nicaraguan side. Corazon funds are administered through national and local governments.

NICARAGUA

Nicaragua suffered a last-minute reshuffling of the structure of the Ministry of Environment and Natural Resources which led to no official government presence. Instead, Nicaragua was represented 'non-officially' by environmental consultant, Carlos Alberto Espinoza (with limited input from Danilo Saravia and John Polisar).



Threats:

- 1) Fires
- 2) Clearing forest for cattle- uncontrolled expansion of range land
- 3) Pollution
- 4) Uncontrolled advancement of agricultural frontier, especially in Cerro Silva, Wawashan from east, and Bosawas from west.
- 5) Possible construction of canal that will run from the coast just north of Indio Maiz to the lake, or along the San Juan River.
- 6) Proposed road from Managua to Bluefields.
- 7) Paving road from Managua to northeast coast. As of now it is only a dirt road.

Priorities:

- 1) Interactive Environmental Education Program – participatory two way workshops that serve as an orientation and process launcher – combinations of orientation, education, and priority setting
 - a. For decision makers
 - i. To comprehend the situation: jaguar distribution, trends, habitat, prey, conflicts, threats, actors - priorities
 - ii. To identify the commitments/actions needed to maintain jaguars
 - iii. To make decisions
 1. Target people from:
 - a. Regional Autonomous Councils (RAAN y RAAS)
 - b. Personnel of SERENA
 - c. Mayors of municipalities
 - d. Representatives from MARENA, MAGFOR, INTA, INAFOR, INETER, MITRAN
 - e. Hunter organizations
 - f. Cattlemen and Cattlemen Associations
 - b. Local level education (Jaguar para Siempre/Jaguars Forever)
 - i. Local environmental NGOs
 - ii. Indigenous authorities
 - iii. Local agricultural businesses including livestock owners and operations
 - c. Journalists and the media
 - d. Festivals
- 2) Increasing the numbers of park guards and education for capacity for conservation and monitoring jaguars and human activities in protected areas. Efficacy in protected areas.
- 3) Improving systems of communication among park guards/headquarters.
- 4) Science
 - a. Ecology of jaguars in the corridor – understanding habitats and prey base
 - b. Connectivity analysis – understanding distribution and abundance of jaguars in the corridor – where is the best continuity, what are the best opportunities, and who are the most important actors to involve to maintain corridor
 - c. Technical information
 - i. Results need to be transformed into common terms and results taken to the decision makers and public.

Partners:

- a. Non-government organizations at national and local level
- b. Local Universities BICU, URACCAN y UNA/FERENA (Universities long Caribbean Coast)

Most imminent threats: Uncontrolled expansion agriculture and rangeland, especially trending from West to East, associated fires and road expansions, fragmentation of habitats, irrational shooting at jaguars whether attacking livestock or not, and in some areas, prey depletion

Proposals:

- 1) Interactive participatory 2-way education programs at level of decision makers and at local level throughout length of corridor in Nicaragua to better understand the situation and set priorities at regional and local levels
- 2) Partners – nongovernment organizations at national and local level, Universities - BICU, URACCAN y UNA/FERENA

- 3) Increasing park guards for conservation, education and monitoring of jaguars and improving communications and access in the parks – efficacy in JCUs
- 4) Science – Better understanding of jaguar distribution, abundance, status, threats, and ecology of jaguars in the corridor, connectivity analysis, more technical information to feed decisions regarding actions and actors – there is a serious information gap regarding Nicaragua's corridor, and interviews, over-flights, and on-ground visits are needed for a long stretch of poorly known habitats. The results need to be translated to common language and results taken to decision makers at national, regional, and local level, and to all relevant levels and sectors of the public to build alliances and advance the corridor

BELIZE

Marcelo Winsor, Belize Forestry Department, Ministry of Natural Resources and Environment

George Hanson, Belize Forestry Department, Ministry of Natural Resources and Environment

Bart Harmsen, Wildlife Conservation Society (input prior to workshop)



Critical Issues:

Most important:

- Create national coordinator position -- along with provision of logistical infrastructure (vehicle, equipment, operating budget, ability to employ additional staff)
- Address issue of declining prey in terms of jaguar-human conflicts based on jaguar attacks on livestock
- Establish an enforcement unit (invading non-timber forest product extractionists – Xateros, from Guatemala, who consume all the game/prey in the Chiquibul area as priority)

Others:

- Establish national jaguar corridor management plan
- Educational outreach to local communities and farmers
- Planning with a minimum 5-year time frame
- Affirm and make permanent critical corridor links
- Coordination with Forest Department and security organizations regarding illegal hunting and poaching
- Review and enforcement the wildlife act to fortify protection for jaguars → mandatory jail time, fines, and confiscation of equipment
- Protocols of farmer petitioning to kill problem cats
- Protocols for captured cats: what to do with them?
- Explore repopulation possibility with other Mesoamerican countries

MÉXICO

Oscar Ramírez Flores National Director of Priority Species – National Commission for Protected Areas - (CONANP)

Patricia Oropeza National Comisión of Protected Natural Areas of Mexico (CONANP)

Danae Azuara Unidos para la Conservación, A.C. (UPC)

Martin Vargas Prieto General Director of Wildlife

Cuauhtemoc Chávez Tovar Instituto de Ecología UNAM



Critical areas because potential loss of connectivity

- National System of Protected Areas (Add new protected areas; some JCUs are not in any protected area)
- Mesoamerican Biological Corridor to connect Calakmul and Sian Ka'an – make it functional for jaguars.
- Jaguars Without Borders (tri-national alliance): a good chance to support the information about priority areas.
- Important to consider/generate new information inside critical areas:
 - Deforestation predictive models associated to road construction (What is the effect on corridors?)
 - Climate change studies
 - Hurricane effects
 - Data on jaguar habitat use and dispersion
- Corridor status north of Yucatán peninsula is worrisome.
- Border w Laguna del Tigre National Park in Guatemala has connection problems
- Most of Maya Biosphere Reserve and Sierra Lacandon has good connectivity
- Priority areas for jaguar conservation: northeast of Yucatan peninsula, Calakmul, Sierra Lacandon, Sian Ka'an. There are some research projects in these areas.
- Other important places for national priorities are listed in the document The Mexican Jaguar in the 21st Century.

Future studies

There are some projects running

- National study of populations with camera traps (there is a document with the protocol for camera trapping)
- National diagnostic of the conflicts of predation with cattle.

Main actors inside the country that work with jaguars.

SERMARNAT (Natural Resources and Environment Secretary); would deal with jaguar protection and wildlife management, and is formed by:

- General Direction of Wildlife
- Procuraduría Federal
- Instituto Nacional de Ecología
- National Commission of protected areas
- National Commission of forestry
- National Commission for Use and Knowledge of Biodiversity
- Mesoamerican Biological Corridor - Mexico

Agriculture, Cattle, Fish and Food Secretary (SAGARPA)

- Agriculture Sub-secretary
- Cattle Sub-secretary

Academic Institutions

- Instituto de Ecología of Universidad Nacional Autónoma de México (UNAM)
- South Border School (ECOSUR Chetumal, San Cristóbal, Campeche, Tabasco)
- Universidad Autónoma de Yucatán
- Tecnológico de Chetumal
- Universidad Autónoma de Campeche
- Universidad Autónoma de Chiapas
- Natural History Museum

International Academic Institutions:

- DUKE University Nicholas School of Environmental Sciences
- Estación Biológica de Doñana, España

Non-government Organizations:

- Unidos para la Conservación
- Probaturo; Península de Yucatán.
- Biocenosis
- Jaguar Conservancy
- Onca Maya
- EcoCiencia
- Amigos de Sian Ka'an

Conservation initiatives outside protected areas and Encouragements to promote local cooperation

- Project Jaguars Without Borders: funds needed to carry out forthcoming meeting (Chetumal in August) and next meetings.
- Promote wildlife management units in corridors, reintroduction of jaguar prey (also funds needed for this) – studies on habitat, prey, use and monitoring.
- Encouragements for jaguar and habitat conservation – regional workshop to promote this initiative (also funds needed)

National priorities and needs to handle jaguar conflicts (see Main Actors (government and non-government) listed above)

FINAL WORDS AND CLOSING COMMENTS PASEO DE LOS JAGUARES
EVENING JULY 20

Danilo Saravia, CCAD Coordinator for Conservation Strategies and the Sustainable Use of Central America's Natural Resources assisted his comments with a Power point presentation which exhibited the expansion of human populations, essentially west and central to east across the Central American isthmus encroaching on the sparsely populated lands near the Caribbean Sea. Ecological systems and habitats were overlaid by expanding human habitation and increasing accessibility, the signs of population expansion. Saravia presented slides that showed Paseo Pantera, the Mesoamerican Biological Corridor, and the Mesoamerican Corridor of Sustainable Development. Central to his presentation was that science had to have contact with decision makers and conservation had to have relevance to the smallest property owner in the corridor. He mentioned the Cacao Corridor that the Asociación Coordinadora Indígena y Campesina de Agroforesteria Comunitaria Centroamericana (ACICAFOC) was developing, whose path also approximates the jaguar corridor. He emphasized the need to work together, unified, to advance the corridor. He invited WCS to reinforce conservation and development in Central America with CCAD, by working specifically with the CCAD Regional Institute for Biodiversity (IRBIO) located on the campus of la Escuela Panamericana Agrícola Zamorano in Honduras. Saravia closed with a slide in Spanish and Indigenous languages and a clear message that working with people would be key to the success of the corridor.



Dr. Alan Rabinowitz, Executive Director, Science and Exploration, Wildlife Conservation Society closed by thanking all for attending. He pointed out that while tigers and lions were extirpated from an enormous percentage of their original range, jaguars still occupy 50% of their original range. He rang with enthusiasm “I know we can save jaguars. The corridor exists because jaguars have been using it. The jaguars can live with people and we will need to work with people to help them do so”. Rabinowitz emphasized that the meeting had not been about WCS but instead about all actors working together for satisfactory land use planning. The next steps would be visits to the countries and follow ups on the most urgent priorities. He asked that each country propose a jaguar liaison, a point of contact for the JCP. He proposed another meeting in two years, opened the doors of the JCP wide open to ongoing correspondence and questions, and with that, the working session was concluded.

CLOSING DINNER 6:30PM JULY 20:
PEDRO LEON
COORDINATOR OF THE COSTA RICAN PRESIDENTIAL INITIATIVE
PEACE WITH NATURE

In a darkened salon with participants served an elegant dinner, Pedro Leon, Adviser to the President of Costa Rica outlined Costa Rica's new and comprehensive Peace with Nature initiative in detail. Questions from the fascinated audience abounded until finally they had to be stopped to allow Leon to eat his own fare, and with that the event concluded.

Appendix I – Participant List

	Name	Organization
CCAD	Danilo Saravia	CCAD
Belize	George Hanson	Ministerio del Recursos Natural y el Ambiente
	Marcelo Windsor	Ministerio del Recursos Natural y el Ambiente
Bolivia	Leonardo Maffei	WCS Programa del Conservacion del Jaguar
Costa Rica	Mario Coto Hidalgo	Sistema Nacional de Areas de Conservacion (SINAC) - Corredor Biologica
	Marco Vinico Araya	Sistema Nacional de Areas de Conservacion (SINAC) - Gerencia de Areas Protegidas
	José Joaquín Calvo Domingo	Sistema Nacional de Areas de Conservacion (SINAC) - Gerencia de Manejo de Vida Silvestre
	Gustavo Induni	Sistema Nacional de Areas de Conservación (SINAC) / MINAE - Gerencia de Areas Protegidas
	Magally Castro	Sistema Nacional de Areas de Conservacion (SINAC) - Gerencia de Areas Protegidas
	Mario Boza	Pro-Parques / WCS
	Eduardo Carrillo (Observer)	Universidad Nacional de Costa Rica
	Roberto Salom	WCS Programa del Conservacion del Jaguar
	Carlos Manuel Rodriguez	Conservacion International
	Olivier Chassot	Centro Ciencias Tropical
	Diego Acosta	Departamento del Estado, USA - Hub Ambiental
	Jordan Smith (Observer)	CAVU
	David Smith (Observer)	CAVU
Guatemala	Juan Mario Dary	Ministerio del Ambiente y Recursos Naturales (MARN)
	Hiram Ordoñez Chocano	Consejo Nacional de Areas Protegidas (CONAP)
	Sergio Veliz Rizzo	Consejo Nacional de Areas Protegidas (CONAP)
	Alba Nidia Perez	Ministerio del Ambiente y Recursos Naturales (MARN)
	Roan McNab	WCS Guatemala
Honduras	Carla Carcamo	(AFE-COHDEFOR)
	Juan Pablo Suazo	Secretaria de Recursos Naturales y Ambiente

	Nereyda Estrada	(AFE-COHDEFOR)
	Jorge Ivan Restrepo	iRBio / CCAD
Mexico	Oscar Ramirez Flores	Comisión Nacional de Áreas Naturales y Protegidas (CONAP)
	Dra. Patricia Oropeza	Comisión Nacional de Áreas Naturales y Protegidas (CONAP)
	Danae Azuara	Unidos para la Conservacion, A.C.
	Dr. Martin Vargas Prieto	Director General de Vida Silvestre
	Cuauhtemoc Chavez Tovar	Instituto de Ecologia UNAM
Nicaragua	Carlos Espinosa	Consultante Ambiental
Panama	Dario Luque	Autoridad Nacional del Ambiente
	Israel Tejada	Autoridad Nacional del Ambiente
	Aleida Salazar	Areas Protegidas y Vida Silvestre
	Rafael Samudio	SOMASPA
	Julieta Samudio	SOMASPA
USA	Alan Rabinowitz	WCS Programa del Conservacion del Jaguar
	Anton Seimon	WCS Programa de Latin America y Caribe
	Chuck Carr	WCS Programa de Latin America y Caribe
	John Polisar	WCS Programa del Conservacion del Jaguar
	Kathy Marieb	WCS Programa del Conservacion del Jaguar
	Nicole Williams	WCS Programa del Conservacion del Jaguar
	Nalini Mohan	WCS Programa del Educacion
	Evi Paemelaere (Observer)	Ciencias Biologica, Universidad de Auburn
Venezuela		
	Rafael Hoogesteijn	Experto en mitigacion del conflicto con ganaderos y jaguares