

# Tapir Conservation

The Newsletter of the IUCN/SSC Tapir Specialist Group

[www.tapirs.org](http://www.tapirs.org)

*Edited by Leonardo Salas and Stefan Seitz*

## ■ **IUCN/SSC Tapir Action Plan – Second Version Finished**

- TSG Virtual Library on the Web
- New Discovery of Mountain Tapir in Ecuador
- Possible Return of Baird's Tapir to El Salvador
- Conservation across Cultural and National Borders
- The Asian Tapir in Commercial Landscape



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## TAPIR CONSERVATION

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## FROM THE CHAIR

**Letter from the Chair****By Patricia Medici**

The IUCN/SSC Tapir Specialist Group is **VERY PROUD and VERY HAPPY** to announce that after **five** long years of dedication and hard work we have concluded the development of the second version of our **IUCN/SSC Tapir Action Plan!!!** This is one of **the** most significant accomplishments in the history of the Tapir Specialist Group and we want all of you to celebrate with us!!!

As reported in several different occasions over the past years, during the First International Tapir Symposium held in San José, Costa Rica, in November 2001, participants agreed that the revision and updating of the first version of the IUCN/SSC *Tapir Status Survey and Conservation Action Plan* (edited by Daniel Brooks, Richard Bodmer and Sharon Matola in 1997) should be one of the priority goals for the TSG. An Action Planning Committee was created and it was decided that a Population and Habitat Viability Assessment (PHVA), as implemented by the IUCN/SSC Conservation Breeding Specialist Group, would be the most appropriate methodology for the development of updated action plans for each one of the four tapir species, listing and prioritizing actions for the conservation of tapirs and their habitats.

Towards achieving this goal we first conducted the **Malayan Tapir PHVA Workshop**, held in Malaysia, in August 2003. The workshop included 30 participants from the Malayan tapir range countries in Southeast Asia, including Malaysia, Indonesia and Thailand. The second meeting, **Mountain Tapir PHVA Workshop**, was held in Colombia, in October 2004. A total of 63 representatives from the mountain tapir range countries (Colombia, Ecuador, and Peru) attended the workshop. The third workshop, **Baird's Tapir PHVA Workshop**, was held in Belize, in August 2005. A total of 55 participants from the Baird's tapir range countries (Belize, Colombia, Costa Rica, Guatemala, Honduras, Mexico, and Panama) attended the meeting. More recently, from April 15 to 19, 2007, the TSG carried out the **Lowland Tapir PHVA Workshop**, which was held at the Sorocaba Zoo, São Paulo, Brazil, including 70 participants coming from the 11 lowland tapir range countries throughout South America (Argentina, Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, and Venezuela). This last PHVA meeting, like all the previous ones,

was extremely successful and we can now say we have new, updated, prioritized action plans for each one of the four tapir species. Each of these plans focuses on recommendations for the conservation of tapirs in the wild, as well as on captive populations, education and capacity building, research priorities, research gaps, funding and all other relevant topics.

Conservation action plans are designed to promote conservation action financially, technically, or logically, influencing key players at the local, national, regional, and global levels. They provide a common framework for a range of players, from decision-makers at the governmental level, to those who will implement the conservation actions on the ground to interact, to carry out their work synergistically. Because the conservation actions are prioritized and justifications provided,



**CBSG Facilitators and Modellers.** From left to right: **Anders Gonçalves da Silva** (Modeller CBSG Brasil), **Leandro Jerusalinsky** (Facilitator CBSG Brasil), **Arnaud Desbiez** (Modeller CBSG Brasil), **Onnie Byers** (Facilitator CBSG HQ), **Patricia Medici** (Chair, TSG and Facilitator CBSG Brasil), and **Robert Lacy** (Chair & Modeller, CBSG).

scientists, resource managers, agency officials, funding organizations, universities, zoos, and political leaders utilize them when deciding how to allocate available resources. Action plans are also "snapshots in time", providing a baseline set of data and information against which to measure change and monitor progress, indicating where changes of emphasis or direction may be needed to conserve the species. Further, they identify gaps in species research and policy and give direction for future endeavors on what data and knowledge are needed most.

A lot of energy and hard work was necessary to fundraise for and organize these PHVA workshops around the world. Therefore, the publication



**Participants of the Lowland Tapir PHVA Working Group that discussed tapir conservation in Protected Areas.**

of this new Tapir Action Plan cannot be the end of our efforts. We must make sure that our new plan will be actively used by all organizations directly or indirectly involved with tapir conservation, and guarantee that all the actions listed as priorities will be implemented. We want this new Tapir Action Plan to be a **LIVING DOCUMENT**. This means it will constantly be reviewed, updated and adapted according to tapir conservation needs identified in the years to come. To this end, we have already established an Action Plan Implementation Taskforce, which has an enormous responsibility. The taskforce is responsible for promoting the new action plan throughout all tapir range countries in Central and South America, and Southeast Asia, reaching all possible stakeholders and key conservation players. Additionally, the members of the taskforce will be constantly reviewing the action plan and providing technical assistance, help and sup-



**Participants of the Lowland Tapir PHVA Working Group that discussed tapir ex-situ conservation.**

port for proposal development, writing and fundraising, and political lobbying. An important outcome of these PHVA Workshops was the creation of a network of professionals and organizations committed to put in practice all the actions listed as priorities. Therefore, another major responsibility of the taskforce will be to keep in contact with these professionals and make sure they work on their actions. The progress made in implementing the Tapir Action Plan will be evaluated during the International Tapir Symposium every two years, where the general TSG audience will be updated on progress in conserving tapirs according to this master plan.

The English version of the Malayan Tapir Action Plan and Spanish versions of the Mountain Tapir and Baird's Tapir Action Plans are available online on the TSG website and can be downloaded in PDF format. The latter two are in the process of being translated



**Participants of the Lowland Tapir PHVA Working Group that discussed tapir hunting.**



**Participants of the Lowland Tapir PHVA Working Group that discussed education and communication.**

into English. The Lowland Tapir Action Plan will be published in approximately three months. It will be made available on the TSG website in Portuguese, Spanish and English.

Speaking for all of us in the TSG, I would like to take this opportunity to express our gratitude to all people and organizations that helped us make this happen! In order to organize and conduct these workshops we counted with the support of a **very large** list of institutional and financial supporters that were with us all along the way. Together, we worked tirelessly to organize and conduct each workshop, compile final reports and develop the action plans. Right now, I would like to say a special **THANK YOU!!** to the **Sorocaba Zoo** here in Brazil, our main partners for the organization of the Lowland Tapir PHVA Workshop.

The boxes below provide further information about each one of our PHVA Workshops and Action Plans, including lists of organizers, institutional and financial supporters, and lists of participants per range country. You, the reader, may also want to visit our website at: [www.tapirs.org](http://www.tapirs.org)

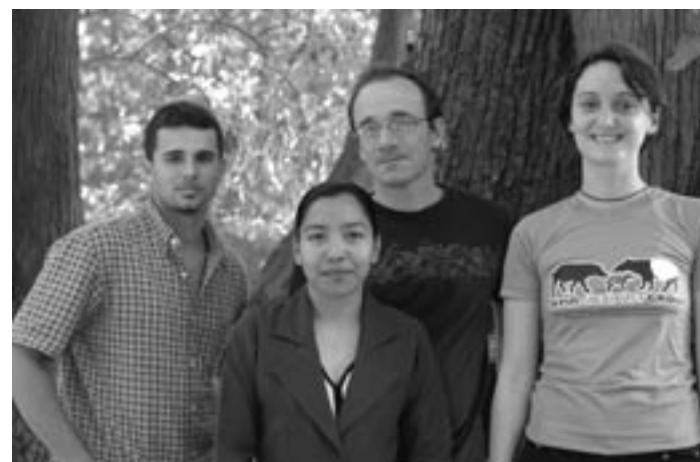
**A**nother **VERY IMPORTANT** announcement is that in January 2007 the board of the Copenhagen Zoo in Denmark approved a proposal to cover the TSG's annual operational costs, including general expenses with the implementation of our new Tapir Action Plan, which is absolutely great news for the TSG. This support will be fundamental to help us establish a system to guarantee that our Action Planning Implementation Taskforce will be able to get started with the process of implementing the actions included in our new action plan. We could not be more grateful for this support, and for the person who is truly behind this... our TSG member and Chair of the EAZA Tapir TAG, Bengt Holst. We will always be grateful for everything Bengt does for the TSG and for tapir conservation in general.

On another important piece of news, we have added over 100 new tapir references to our **TSG Virtual Library**. Our library now contains 450 bibliographical references including scientific papers, book chapters, dissertations etc. all in PDF format!!! The TSG Virtual Library is a joint volunteer project of the TSG and the Botanical Research Institute of Texas (BRIT) and aims to make available all published bibliography on tapirs. We aim to make this a constantly updated and robust resource for tapir researchers and those interested in accessing published studies and articles on tapirs which are often difficult to obtain in hard copy. Visit our library at: <http://atrium.tapirs.org/>

Regarding TSG documents, we have just managed to finalize our **TSG Tapir Field Veterinary Manual**, which will soon be available on our TSG website in English, Portuguese and Spanish. Additionally, we have finalized the very first draft of our **TSG**



**Participants of the Lowland Tapir PHVA Taskforce that discussed tapir epidemiology.**



**Participants from French Guiana and Suriname. From left to right: Krisna Gajapersad (Suriname), Claudine Sakimin (Suriname), Benoit de Thoisy (French Guiana), and Laure Debeir (French Guiana).**

**Experimental Protocols for Tapir Re-Introductions and Translocations**, a document that was developed by a group of TSG members including biologists, veterinarians and geneticists. This first draft will be submitted to the IUCN/SSC Re-Introduction Specialist Group for review and endorsement, and the final document will soon be available online in all appropriate languages. A brief note on these documents is included in this issue.

During the Lowland Tapir PHVA Workshop we added several new members to the TSG, and made a few changes on our group's structure. We now have a new Country Coordinator for Bolivia, Guido Ayala, who works for the Wildlife Conservation Society in Bolivia. And we put together a system of Regional Coordinators for the TSG in Brazil. Brazil is such a vast country that we would never be able to carry out the process



**We would like to thank Bengt Holst, Director of Conservation and Science of the Copenhagen Zoo in Denmark, Chair of the EAZA Tapir TAG, and member of the Tapir Specialist Group, for obtaining the funding for the TSG operational costs, a great achievement for the group.**

of developing a National Action Plan for this country without having more Brazilians on board. Therefore, we now have coordinators for each region of Brazil and our first step will be to compile a list of people and organizations involved with tapir conservation in the country.



**The team responsible for the development of the first draft of the TSG Experimental Guidelines for Tapir Re-Introduction and Translocation. From left to right, standing up: Anders Gonçalves da Silva, Javier Sarria Perea, Joares May Jr., Ralph Vanstreels, and Marcelo Schiavo. From left to right, kneeling down: José Maria de Aragao, Paulo Rogério Mangini, and Patrícia Medici. Missing from photograph: Leo Salas.**



**Logo of the Copenhagen Zoo in Denmark.**

Last but not least, we would like to announce that we have already started the process of organization of our **Fourth International Tapir Symposium** that will most probably be held in April 2008 in Mexico. The exact dates and venue will be announced very soon! My very best wishes from Brazil!

#### **Patrícia Medici**

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#### **Errata**

A slight editorial mistake caused us to credit the interview with Mr. Carlos Rodríguez (*Tapir Conservation Newsletter* 15/2: 11-13, 2006) to Kevin Flesher, when the real author was Jeff Flocken. This error was promptly corrected, regrettably only after the issue went to print.

The electronic (downloadable) version gives the correct credit: [http://tapirs.org/Downloads/newsletters/tcn\\_20\\_low.pdf](http://tapirs.org/Downloads/newsletters/tcn_20_low.pdf)

Our sincere apologies.

**The editors**

**MALAYAN TAPIR  
CONSERVATION WORKSHOP  
Population and Habitat Viability Assessment  
(PHVA)**

**Lanchang Training Center, Krau Wildlife Reserve, Malaysia  
August 12-16, 2003**

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Population and Habitat Viability Assessment  
(PHVA)**

**Otún-Quimbaya Sanctuary, Pereira, Colombia  
October 12-15, 2004**

**TALLER DE CONSERVACIÓN DE LA  
DANTA DE MONTAÑA  
Evaluación de Viabilidad Poblacional y de  
Hábitat (PHVA)**

**Santuario de Fauna y Flora Otún-Quimbaya, Pereira, Colombia  
12-15 Octubre 2004**

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**BAIRD'S TAPIR CONSERVATION WORKSHOP****Population and Habitat Viability Assessment (PHVA)**

The Belize Zoo & Tropical Education Center,  
 Belize, Central America  
 August 15-19, 2005

**TALLER DE CONSERVACIÓN DE LA DANTA CENTROAMERICANA**  
**Evaluación de Viabilidad Poblacional y de Hábitat (PHVA)**

Zoológico de Belice y Centro de Educación Tropical,  
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 Wuppertal Zoo, Germany  
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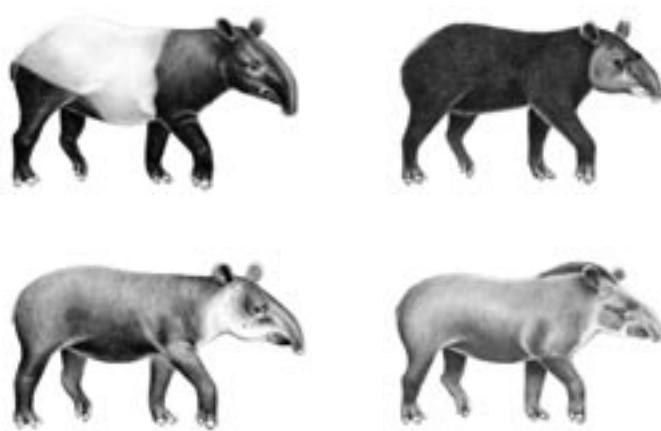
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## TSG COMMITTEE REPORTS

# TSG Marketing and Website Report January - June 2007

**By Gilia Angell**

I am pleased to report very interesting additions and changes to our website ([www.tapirs.org](http://www.tapirs.org)). It is already a relatively popular site, receiving over 3,000 hits per day. About 10% of these result in visits (~300/day) that last on average 2 minutes. These visitors view on average 4.8 pages, with "Downloads" and "About Tapirs" areas being the most popular destinations. Most people still find us through searches on MSN Search and Google, and thus enter our site via our homepage, rather than through links in other websites.

The following are our new additions:

- Additional print-resolution photos to our picture collection, including rare wild mountain tapir photos, all contributed by TSG researchers in the field.
- An expanded news area with links to tapir-related articles all over the world (in English), thereby establishing a log of all online news and media related to tapirs going back to 2004.
- A new FTP account for TSG members to use for large file exchanges (please contact Gilia for access).

The latter two additions complete or supplement an action from our 2006-2007 list of actions, including actions created at Baird's and Lowland Tapir PHVAs. Notably, our domain was moved to a more stable and supported server: ix-webhosting.com. In the near future we will explore launching some field videos to YouTube. This free video viewing service could be a great way to cross-promote TSG and tapir conservation, and to contribute some science-based, interesting videos to the "tapirs" subject on YouTube. It's also a safer way to share our video content, instead of providing it for download on our site.

There have been several new developments regarding our Marketing Committee's work and media tapir news.

Noteworthy amount of media coverage of tapir births around the world – including the baby tapir born to the Edinburgh Zoo in Scotland. This baby's photo was seen in photo streams as far away as Colombia. See our site news section for full coverage of zoo tapir births (<http://tapirs.org/news>).

Malayan tapirs received some of our attention during the last six months. We assisted Wilson Novarino, our Malay Tapir Coordinator, to procure a Malayan Tapir video from the Woodland Park Zoo in Seattle. Wilson is using this video for his educational outreach campaign in Indonesia. Similarly, we contributed a photo of a Malayan Tapir for educational poster campaign about endemic wildlife in Malaysia.

At the Lowland Tapir PHVA in Sorocaba, Brazil, our committee prioritized a main goal: create a campaign manual/toolkit for TSG members and tapir advocates to create and implement their educational campaigns or outreach activities. The kit will include tip sheets on identifying tapir populations and target audiences, on working with various audiences – from local communities to the media, and will consolidate all tools (videos, materials for kids, brochures for printing, etc.) in one place on the website. The kit will be made available in English, Portuguese and Spanish. We aim to have materials that are general enough to tailor to regional or cultural differences among tapir locales and audiences. Implementing this kit is the marketing committee's number one priority for 2007. We are looking for any help in putting these materials together. If you wish to assist, or possess some materials that can help us achieve this goal, please contact Gilia.

### **Gilia Angell**

Coordinator, TSG Marketing Committee

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<http://www.tapirs.org/committees/marketing-committee.html>

## Our New URLs

Update bookmarks to our new web address: [www.tapirs.org](http://www.tapirs.org). Our old URL [www.tapirspecialistgroup.org](http://www.tapirspecialistgroup.org) will still work, but only to direct you to the new one. We acquired [www.tapirs.org](http://www.tapirs.org) because it is a much simpler URL to remember and tell people about, and if people update their links to it, we should see [www.tapirs.org](http://www.tapirs.org) appear higher on searches for "tapir" and "tapirs" on search engines.

Please also note the TSG Virtual Library is now found at <http://atrium.tapirs.org>. This superb achievement is the masterwork of our web master and Marketing Committee Coordinator, Gilia Angell. Please contact Gilia (e-mail: [gilia\\_angell@earthlink.net](mailto:gilia_angell@earthlink.net)) if you would like to contribute content to [www.tapirs.org](http://www.tapirs.org).

The editors

# TSG Veterinary Committee Report

By Paulo Rogerio Mangini

The IUCN/SSC Tapir Specialist Group (TSG) Veterinary Committee was formed during the First International Tapir Symposium held in San Jose, Costa Rica, in November of 2001. The purpose of this committee was to address any and all health-related issues that could affect the conservation of the genus *Tapirus*.

## TSG Tapir Field Veterinary Manual

The first and main task of the TSG Veterinary Committee was to develop a Tapir Field Veterinary Manual compiling all available data and information about tapir capture, immobilization, manipulation, collection of biological samples, and general epidemiological information. After six long years trying to turn this Manual into reality, we finally concluded the work. We are proud to announce that the TSG Tapir Field Veterinary Manual is ready in English, Portuguese and Spanish and available in PDF Format on the TSG website.

The manual was created as a very detailed, complete source of information to help tapir field researchers implement projects including tapir capture and manipulation, as well as health assessment of wild tapir populations. This manual includes information about when and how to do any procedures, giving an array of different possibilities and always explaining the applicability of veterinary medicine in tapir conservation. It also includes information about basic tapir anatomy, different experiences with different capture methods, and adequate drugs for chemical restraint, considering the most important aspects to conduct safe captures and handling of wild tapirs.

Considerations are provided on how to conduct necropsy, clinical evaluation and collection, handling and storage of biological samples. Examples illustrate easy and practical means to collect and store biological material that could help to understand the wild tapir population health status. Other subjects addressed include: tapir hematology, blood chemistry, immunological screening and a brief reproductive physiology review. Recommended research topics on these issues are also available to guide progress in our understanding of tapir physiology.

Finally, the manual presents an appendix with general information about anesthetic agents commonly used for tapirs, some important signs of selected diseases that may cause tapir mortality, plus spreadsheets examples with chemical restraint and clinical evaluation, body measurements and necropsy, which could be very useful to simplify and standardize field data collection on tapir health. Even though this manual was prepared thinking of field research procedures on wild animals, the information inside is readily applicable to evaluate and monitor the health status of captive tapirs too.

## IUCN Experimental Protocols For Tapir Re-Introductions and Translocations

The environmental conservation and management philosophy of the International Union for the Conservation of Nature (IUCN) and other conservation bodies, stated in key documents such as "Caring for the Earth" and "Global Biodiversity Strategy," acknowledges the need for approaches that include community involvement and participation in sustainable natural resource conservation, promote the overall enhancement of the quality of human life, and that seek to conserve or, where necessary, restore ecosystems.

Restoration efforts focused on single species of plants and animals are becoming more frequent around the world. Some such efforts succeed; yet, many still fail. Therefore, empirically tested guidelines are needed to ensure re-introductions and translocations are both justifiable and likely to succeed. It is equally important that the conservation world learn from each initiative, successful or not.

The four tapir species are ideal candidates for re-introduction and translocation programs. Previous studies have demonstrated that tapirs are highly plastic and adaptable in terms of diet, environmental conditions, and habitat use, and therefore have the potential to adapt to a variety of different types of habitat. In addition, tapirs live in threatened ecosystems, in which biological diversity is maintained by the tapirs' key ecological roles, including seed predation and dispersal (especially of large seeds), selective sapling browsing in tree fall gaps, and nutrient recycling.

The Tapir Specialists Group (TSG), a member of the Species Survival Commission (SSC) of the International Union for the Conservation of Nature (IUCN), has set the highest priority to the development of protocols that are of direct, practical assistance to those planning, approving, supervising, and/or carrying out tapir re-introductions and/or translocations. This document comprises the first edition of these protocols, and is by no means complete or authoritative. It is composed of well-informed suggestions and recommendations about how to proceed with tapir re-introductions and translocations, which must be continuously tested and

improved upon. Our target audiences, at this juncture, are the practitioners (usually wildlife managers or scientists), rather than decision-makers in governmental agencies.

With the above in mind, this experimental protocol for tapir re-introduction and translocation is divided into steps that are designed to test different modes of re-introduction and translocation, taking into account individual animal variability and the diversity of environmental settings. At each step, there must be intensive record-keeping for peer-reviewing and future reproducibility of successful methods and techniques. It is hoped that our approach will stimulate tapir conservationists and other interested parties to think critically about protocols presented herein, helping to expand on our suggestions towards a more comprehensive management tool for tapir conservation.

As such, the protocols outlined below are but a first step in the direction of full-fledged guidelines. Nevertheless, however experimental our protocols may be, they still hold a few fundamental points in common to any re-introduction and translocation program. First, some degree of mortality is to be expected, but every care should be taken to minimize losses. Second, the ultimate goal of any such program is to establish a viable population, which can grow and evolve on its own. This is the fundamental goal of the protocols outlined below, this goal should always be kept in sight, and all steps should lead towards this objective. Last, re-introductions and translocations are always very lengthy, complex and expensive processes. Before attempting to implement these protocols, financial and logistical considerations should be carefully thought-out to guarantee the resources are available to carry the program to term.

While we believe that it is important to take into consideration financial limitations, we attempt to put together what we think is the best compromise, which will not only minimize the risks to the animals, but also to the team working on the program, and maximize the chances of success. Funds will ultimately shape what is effectively possible, but every effort should be made to carry out all the steps outlined below. Considerations about the success of the re-introductions and translocations aside, the most important reason to follow these experimental protocols is to ensure comparison among programs with different tapir species in different areas. Only through comparisons can we begin to understand the role of the innumerable variables involved in the process and improve based on the gained knowledge.

Finally, we tried to make this document general enough so that it might apply to all four tapir species, over a wide range of local conditions. Nevertheless, we make note of particular areas where we think a broader array of methods or techniques might be applicable.

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# Tungurahua Volcano: An Estrategeic Refuge for Mountain Tapirs in Ecuador

Juan Pablo Reyes Puig<sup>1</sup>, Nelson Palacios<sup>2</sup> and Andrés Tapia<sup>3</sup>

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**«A la cabeza de los pensamientos de los pobladores de la región, merece figurar la danta o Gran Bestia, animal al que tenía yo por semi-fabuloso en mis exploraciones; pues siempre que oía que en tal o cuál lugar abundan las dantas me sonreía con cierto aire de duda; pero ahora estoy convencido de que en los bosques de los contrafuertes del Tungurahua, existen real y efectivamente dantas, y a juzgar por los caminos construidos por ellas, que se cruzan en todas direcciones, y por la enorme cantidad de excrementos que se encuentra de ellos, su número debe ser considerable.»**

Nicolás G. Martínez. Hacienda San Antonio.  
Noviembre de 1910.

The Tungurahua volcano is located in the Central region of the Ecuadorian Andes. With an altitude of 5,023 m a.s.l., it is one of the most active volcanoes of the world. For centuries this mountain has been modeling the variety of local ecosystems due to continuous eruptions and it has regulated the dynamics of one of the richest Andean fauna and flora.

Baños – the closest town to the volcano – is a small village in the doors of the Central Ecuadorian Amazonia. In the past decades most researchers have neglected this area in search of more diverse habitats in lowland ecosystems (Lynch and Duellman 1980). For that reason, there are just historic or anecdotic registers of the fauna, but no long-term studies that depict the faunal composition of the region.

Paradoxically, this area is one of the most well preserved of the Ecuadorian Andes and, because of its connectivity with other protected areas (i. e., Sangay National Park, San Antonio Forest Reserve), represents a strategic corridor for the survival of the endangered mountain tapir (*Tapirus pinchaque*). Here, we present the most recent direct record of a mountain tapir in the eastern flanks of the Tungurahua volcano.

Access to the wild domains of mountain tapirs demanded three hours following tapir trails in a nearly inaccessible Andean forest and across the 300 to 500 m

tall rock walls that raise from the bottom of the valley of the Salt River ("Rio de la Sal"). The sighting of two individuals was made at an altitude of 2,600 m a.s.l., beside natural springs of mineral waters that come from the volcano and could be used by tapirs as a source of salts and minerals. The surrounding forest is composed of endangered trees like Sisin (*Podocarpus sp.*) and Palma de Ramos (*Ceroxylon sp.*), with other typical elements of cloud forest like moss, lichens, bromeliads and orchids (Figure 1).

The first tapir was seen while crossing the river at a distance of 30 m and heading to the forest in the direction of the páramo. After this encounter, we walked approximately 200 m and arrived at a natural spring where we saw another individual hiding between rocks and vegetation (Figure 2). The skin of the posterior part of this second animal appeared to be affected because it lacks a patch of hair\*. We supposed this animal to be unhealthy because it did not escape rapidly and we could even touch it before it ran away.

Several direct observations have been made in the last years in Tungurahua, but without adequate record-



**Figure 1. Andean Cloud forest habitat of the mountain tapir on the eastern slopes of the Tungurahua Volcano, Ecuador, ca. 2,600 m a.s.l. The circle shows a fleeing tapir. Credit: Juan Pablo Reyes Puig.**



**Figure 2. Direct sighting of a mountain tapir in its natural habitat on the Tungurahua Volcano, Ecuador.**  
Credit: Juan Pablo Reyes Puig.

ing and verifiable evidence. In the surrounding areas (i.e. Runtun, Pondo) indirect observations (tracks and feces) evidence other mountain tapir groups that could be more or less connected with the Tungurahua population. Historical reports (e.g., Martínez 1933) mention that this mammal was common at the beginning of the 20th century but, according to the local inhabitants, the tapir populations were severely threatened by hunting until 1990, when this activity was forbidden.

In addition, the constant eruptions of the Tungurahua volcano have stopped the colonization of the region with the consequent improvement of the natural areas surrounding it. Due to its inaccessibility, the influence of the eruptions in keeping humans at bay, and its connectivity with other protected zones, this area could constitute one of the last refuges for mountain tapirs in the Ecuadorian Andes.

The tapir observations described herein were made while conducting a monitoring project on endangered wildlife at the Tungurahua Volcano, with support from Ecociencia and Conservation International.

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\**N.B. patches of bare skin in the hind quarters of Mountain Tapirs are not uncommon and at present it is unknown whether these are indicators of the health or age of the animals.*

## Occurrence of Baird's Tapir Outside Protected Areas in Belize

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### Abstract

We conducted a preliminary survey of the presence of the endangered Baird's tapir outside protected areas in Belize during March to May 2006. We found that Baird's tapir occurred in every district of Belize and that hunting of the species took place but was not widespread. We make suggestions for further conservation and management of the species outside protected areas.

### Introduction

Baird's tapir (*Tapirus bairdii*) occurs from south eastern Mexico to northern Colombia. The species is an important food resource for local people and plays an important role as seed disperser for many plant species. Currently it is considered vulnerable to local extinction triggered by habitat loss and over-hunting (Naranjo & Bodmer 2002) and is classified as endangered (IUCN, 2006).

Little research has been undertaken on Baird's tapir in Belize since the 1980s (Fragoso 1983; Fragoso, 1991). The IUCN/SSC Tapir Specialist Group organised a Population & Habitat Viability Analysis (PHVA) workshop for Baird's tapir in August 2005 which highlighted the lack of data available on the distribution and status of the species within Belize, as well as in other range countries. A survey of the distribution of Baird's tapir in Belize was recommended as a result of the PHVA (Medici *et al.*, 2006).

Tapirs are protected from hunting in Belize but they can be legally shot if they destroy crops or become dangerous to humans. During the Baird's tapir PHVA, participants were informed of the remains of eight tapirs discovered near the protected area of Tapir Mountain in Belize (R. Richardson in Waters *et al.*, 2006). The possibility was raised that these might be retaliatory killings of the species as a result of its crop raiding behaviour. This study aimed to make a preliminary assessment of the extent that Baird's tapirs conflicted with people due to crop raiding, and to ascertain the presence of Baird's tapir outside protected areas in Belize. Results of the latter aspect of the study are presented here; results on the human/tapir conflict survey will be published elsewhere.

This study was conducted throughout Belize, where the Baird's tapir is the national animal. The country has one of the lowest human populations in Central America, with ~240,000 inhabitants (Roberts, 2000). A high proportion of the country (approximately 36%) is within protected areas. However, Belize has illegal encroachment problems on its western border with Guatemala, where protected areas are heavily frequented by collectors of xaté palm leaves (*Chamaedorea* sp.). This activity has been prevalent since 1998 (Anon, 2005) and up to 1,000 illegal xaté collectors have been reported to camp and hunt in the Chiquibul protected area (comprised of the Chiquibul Forest Reserve and the Chiquibul National Park) whilst harvesting the leaf (Castillo, 2005). Although the forestry division regularly patrols the protected areas in an attempt to prevent illegal collection of xaté, the large number of people and the large size of the areas they use may mean that illegal hunting of protected species such as the Baird's tapir is prevalent in these protected areas.

## Methods

We undertook a countrywide assessment of human-wildlife conflict amongst subsistence farmers in Belize from March to May 2006. We used a structured questionnaire to interview local people from all six districts of Belize about potential problems with crop raiding by wild animals. The villages targeted for interviews were selected based on their dependence on

subsistence agriculture and location outside protected areas. Those villages and communities dependent on citrus, banana and sugar cane cultivation, and cattle farming, were excluded from the survey. The questionnaire was administered to the person who worked on his/her farm in every sixth house in a village.

The interview protocol was thus: The interviewer told the respondent that s/he was from an NGO and undertaking research on agriculture. They were then asked if they would answer questions regarding their land and crops and were assured of confidentiality. When the questionnaire was completed, and if the respondent had not already mentioned Baird's tapir as a crop raider, they were asked about the presence of tapirs in the area. GPS locations for Baird's tapir were recorded if they were reported by at least two respondents independently of one another in each village surveyed, and/or where evidence of tapir sign such as foraging sign or footprints was found. If possible, the farm where crop raiding had been reported was visited and a GPS location taken there. Otherwise, the location of the village where the respondent lived who had reported the presence of Baird's tapir on his farm was recorded. A GIS map was generated from these data.

## Results

A total of 168 people were interviewed during the survey from a total of 63 villages. Baird's tapir were reported from all six districts of Belize. We verified 19.6% (N = 51) of reports of tapir occurrence by sign. A map showing reported presence of Baird's tapir can be seen in Figure 1.

Hunting was reported to take place in 10 of the 51 locations where tapirs were reported to occur. In two villages, interviewees reported that tapirs were hunted preferentially for their meat. 9.6% of respondents reporting that tapir occurred in their areas (N = 73) indicated, without prompting, that they shot them. Orange Walk and Belize districts reported a higher incidence than would be expected by chance of tapir hunting when compared to other districts of the country (Fisher's exact test, p = 0.003). In addition, four respondents stated, without prompting, that they had been charged by an adult Baird's tapir whilst in the forest, although they had escaped without injury.

## Discussion

The distribution data collected for Baird's tapir cannot be used to ascertain relative abundance of the species throughout Belize; yet, these data may be useful for understanding patterns of presence and absence of the



**Figure 1. Baird's Tapir Records Outside Protected Areas in Belize.**

species within the landscape. They also demonstrate that, unlike the lowland tapir in Peru (Naughton-Treves *et al.*, 2003), Baird's tapirs visit farms near settlements, as tracks were found near human habitation in this survey.

Orange Walk has the lowest number of reports of tapirs although the species does occur in the protected area of the Programme for Belize (E. Ariola, pers. comm.) located in the northwest of the district. Orange Walk is also one of the two districts that yielded more reports of tapir hunting than would be expected by chance among all districts of the country.

Three unprotected areas appear to hold what may be sustainable tapir populations and merit further investigation. These are: the watershed of the New River in Corozal; the area south (and probably north) of Yalbac Creek in northern Cayo district, along with a population of black howlers and the possibility of the occurrence of spider monkeys (Waters & Ulloa, submitted); and the watershed of the Temash River in southwestern Belize where black howlers were also commonly heard (Waters & Ulloa, submitted).

Although hunting by subsistence farmers in response to crop raiding does not appear to threaten

Baird's tapir in Belize at present (Waters & Ulloa, in prep.), preferential hunting of tapir for their meat appears to be localized in some areas with potential threats of unsustainable extraction.

The reports of the remains of eight tapirs mentioned above, a report of an adult tapir shot on farmland near the Tapir Mountain reserve in 2005 (R. Richards, pers comm.), and another report of an animal shot in the area of Monkey Bay near Belmopan while conducting this survey, reflect that tapirs are also being shot in Belize for other reasons apart from crop raiding or for their meat. All respondents who reported being charged by tapirs whilst in the forest expressed fear at meeting them. It was perceived knowledge amongst respondents during the survey that surprising a female tapir and calf whilst in the forest may cause the female to charge at the disturbance. Thus, another aspect of human-wildlife conflict – fear of death or injury by a large animal – could be a possible explanation for the abovementioned, apparently motiveless, killings of tapirs. Although this situation has not, so far as is known, led to any human fatalities in Belize, there may be a common misapprehension that all tapirs are unpredictable and thus dangerous, and this may lead to killing of the species whenever it is encountered. However, this needs further work before any firm conclusions can be reached.

Tapirs may remain common in Belize because they are not a preferred meat species for the majority of the population (Fragoso, 1991). Its status as Belize's national animal was also mentioned by respondents as a reason for not killing the species. However, there is no room for complacency because the extent of the effect that illegal xaté collectors are having on wildlife in protected areas of western Belize is not being quantified and could be extensive and negatively impacting on the Baird's tapir over an important area of its distribution. Xaté collectors may be entering areas otherwise rarely visited by subsistence hunters and farmers. The fact that some protected areas are not secure from illegal hunting means that unprotected areas which are still relatively undeveloped and have yielded evidence of tapir and primate presence should be the subject of stakeholder conservation management plans to ensure that the habitat supporting those and other species does not disappear.

## Acknowledgements

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## About the possible Return of Baird's Tapir to El Salvador

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### Abstract

As it is well known, the Baird's tapir (*Tapirus bairdii*) has been declared extinct in El Salvador since 1982 by the UICN. However, two reports in 2002 and 2004 suggested the presence of the species in some Salvadorian protected areas. In both cases field biologists reported footprints of a tapir but there are no verifiable evidences to support the reports (such as photographs, plaster moulds, videos, etc). Due to the increasing interest of some Salvadorian zoologists to update and produce confident wildlife inventories, and as a result of the mentioned reports, a research team attempted

to verify the possible presence of *T. bairdii* in the country. The first efforts were carried out in two protected areas, El Imposible and Barra de Santiago – Sector Santa Rita, where the footprints were reported in 2002 and 2004, respectively. Although this first attempt to obtain definitive evidences to establish the presence of this species in El Salvador did not confirm the mentioned reports, there is a good possibility that some individuals of *T. bairdii* from Guatemala are exploring Salvadorian land due to the good quality of habitat observed particularly in the El Imposible National Park. Notably, some local inhabitants in the surveyed areas attest to never have seen a tapir.

## Background and Justification

The main threat faced by Baird's tapir is habitat destruction; different records show that the species survives principally in zones where human access is difficult and, as a consequence, there is abundant high-quality tapir habitat (Matola et al., 1997).

Particularly in El Salvador, it is assumed that the high rate of deforestation was the main problem for this species resulting in its extinction formally declared by IUCN in 1982 (Thornback & Jenkins, 1982); however there is a lack of scientific evidence to explain this extinction process. Also, civil war in the country (1980-1992) may have affected tapir populations but there are not explanations about how and where it could contribute to the extinction.

Thus, accepting that *T. bairdii* is absent in El Salvador, some thoughts have been given to evaluate potential habitat in natural protected areas within the country. Matola et al. (1997) consider the National Parks El Imposible and Montecristo as sites with potential habitat for Baird's tapir; particularly the last one (which is adjacent to forest in Honduras and Guatemala) has been mentioned as the protected area with more possibilities to house a remaining population. The same authors have expressed that if the species is not yet extinct, the prospects for its conservation are difficult and, due to the lack of information about the country, they suggest new surveys are needed. On the other hand, Owen (2003) has suggested that tapir is probably restricted to El Imposible; based on the skull of a specimen which was found in the park in 1987, he considers that the species has been present in this National Park at least since the mid-80s.

A after almost twenty years without reports about *T. bairdii* in El Salvador, a casual finding of footprints in 2002 resurrected the interest for the species among the zoologists in the country. Although there were no verifiable evidences, Owen (2003) accepted the authenticity of the finding and he has speculated about the origin of this tapir, considering two possibilities: (1) the tracks were made by an unknown specimen of the original population of the Salvadorian tapirs (assuming that the Baird's tapir was not extinct in the country); or, (2) tapirs from Guatemala have re-colonized El Imposible.

Consequently, the main objectives of the survey carried out by our research team were, first, to start a systematic search to determine if Baird's tapir is really back to El Salvador; second, to contribute to the efforts of the Specialist Tapir Group of IUCN to update information about the species in the Central American region; and third, to encourage the new generations of Salvadorian biologists to become involved in the study and conservation of wildlife and vulnerable ecosystems in this country.

## The Recent Reports

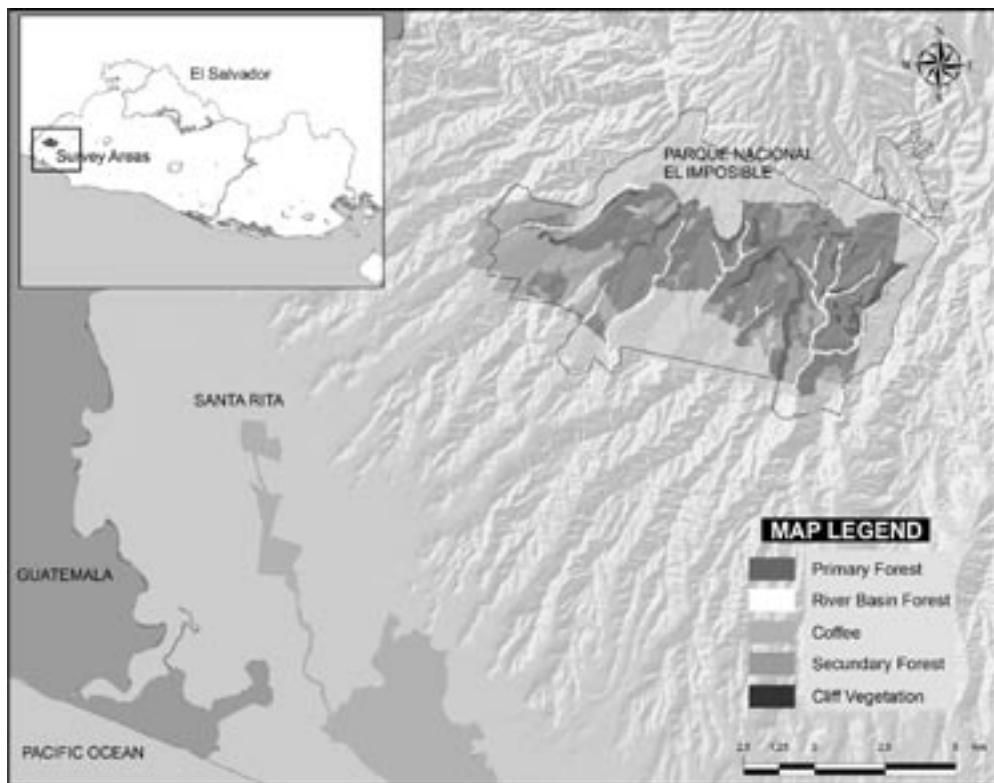
In 2002 the Dutch herpetologist Twan Leenders was collaborating in El Salvador with the local NGO SalvaNATURA to produce a zoological inventory for the National Park El Imposible. At the end of one trip, Leenders mentioned that he found tracks of an adult tapir near the site named "Piedra Sellada" (an interesting archaeological place at the East of the National Park, see Figure 1), and also he said that in one of the prints the smaller fourth toe was evident. He measured the diameter of the track at its widest point (between the toe tips), and it was of 185 mm; unfortunately, he could not take at least a picture to provide evidences of his finding (Oliver Komar, pers. comm., 2002).

After two years, in 2004, during a botanical survey in the Protected Natural Area Barra de Santiago Sector Santa Rita, the Salvadorian botanist Raul Villacorta reported tracks of tapir and apparently his information had a relative impact (Ministerio de Medio Ambiente de El Salvador, pers. comm., 2006). Again, this new record was not backed with verifiable evidence.

## Areas Surveyed: The National Park El Imposible and the Natural Protected Area Barra de Santiago Sector Santa Rita

These protected areas are relatively close to each other (Figure 1) but they keep different types of ecosystems and habitats. El Imposible has an extension of about 4,318 hectares and it is characterized by mid-elevation tropical montane forest; in its highest elevations there are portions of remnant cloud forest. The park presents an altitudinal range between 500 and 1,425 m.a.s.l. It is considered as one of the last tropical forest in El Salvador. There are eight main rivers crossing the zone and a large amount of brooks. The National Park was created in 1989 and currently has an interesting international prestige (Samayoa-Valiente et al., 2007).

The Natural Protected Area Barra de Santiago is made up of four Sectors: Barra de Santiago, El Chino, Cara Sucia y Santa Rita. Tapir evidence was found in the fourth Sector. It is classified by the IUCN as Category 6, its extension is approximately of 2,689 hectares and present an altitudinal range between 0 and 20 m.a.s.l. Mangrove is the predominant vegetation. This area is not formally protected (Herrera, 1997).



**Figure 1. Areas Surveyed: The National Park El Imposible and the Natural Protected Area Barra de Santiago Sector Santa Rita.**

## Survey Locations, Methods and Results

The first intensive survey took place in November 2006 and it was two weeks long; mainly looking for tapir evidences in El Imposible but also as a way to attract attention to the species in the country. The fieldwork in this National Park was divided in two stages. The first was carried out in the Sector San Benito and the second in the Sector La Fincona. In Barra de Santiago, Sector Santa Rita the fieldwork was brief due to weather conditions.

The most recent report of tapir footprints in the park is located in El Imposible, Sector San Benito; consequently a considerable research effort was focused in this region mainly looking for tracks along the Guayapa River. For methodological purposes this river was considered as a big transect (just inside the park boundaries) where the transect length was the same as the river's, and the width was about 40 meters (20 m by each side of the river). Subsequently, following the same methodology, the Venado River was sampled; this river is located in the same area as Piedra Sellada. A base camp was set at a high point at the south of Guayapa River, and from this site numerous streams which are linked to the Guayapa were covered. The

last survey in this sector was carried out in the Ixcanal River. It is relevant to mention that in the original research plan the Mashtapula River would be surveyed, however the particular and unexpected weather conditions made unsafe the routes inside the park. El Imposible Sector La Fincona was covered in two days focusing the efforts only in the Mixtepe River.

Staff of the Salvadorian Ministry of Environment and Natural Resources (MARN) suggested to the research team to visit the Barra de Santiago Sector Santa Rita because they knew about a report of tapir tracks made in 2004. This place is relatively near to El Imposible. The visit was brief (just one morning) due to our tight schedule and because the previous day's rainfall flooded this site; hence, it was impossible to look for tracks. Nevertheless, for us it was important to know the habitat conditions in this place considering that the most recent report of Baird's tapir in the country has been done in this protected area.

None of the surveyed places showed evidence of tapir presence. Moreover, some inhabitants of the zone cannot remember when it was the last time that a tapir was sought. Only one park guard in the Sector La Fincona remembers the single occasion that he saw a Baird's tapir individual, and it was when he was a child, more than 25 years ago. We also surveyed brooks trying to find tapir droppings and also looked for feeding evidence, without success.

## Final Comments

In different sites of the National Park El Imposible the habitat conditions are favourable for Baird's tapir; nevertheless, the hard soil in the park made finding tracks challenging and thus our methodology may be inconclusive to ascertain the presence of the species. In the wet season, when soils may be moist and soft enough to be imprinted upon, the rain may easily erase the footprints. Although in diverse places we found white tailed deer (*Odocoileus virginiana*), racoon (*Procyon lotor*) and great curasaw (*Crax rubra*)

footprints, the density of these species in the park made it easy to find them each morning.

Notably, none of the consulted park guards have seen this species. They are a very capable staff and their knowledge about local wildlife is thorough. As stated above, the 40 years old park guard Mr Vidal Campos is the only one among those questioned who vaguely remembers the occasion when in his childhood he saw a tapir in El Imposible.

Despite our results, at the moment it is difficult to confirm whether the tapir is present in El Imposible, although in our opinion if the species is currently there, it must be as result of immigration of tapirs from Guatemala. This possibility poses the opportunity to start a cooperative effort between research teams and academic institutions of El Salvador and Guatemala. Medici et al. (2006) have mentioned that information about biological and ecological monitoring for Baird's tapir is a priority specifically in subjects like current distribution, habitat use and availability, and movement patterns. El Salvador has been a big question mark in terms of tapir distribution, and the recent reports set a challenge. It is important to say that several scientific publications about Central American biodiversity find in El Salvador the same big question, and it is sometimes interpreted as absence of some species. However, the real problem is that El Salvador has been a poorly studied country for a long time. Based on literature review (746 references), Herrera (2002) concludes that in the past 15 years the vertebrates are the most studied group in El Salvador (40% of the published materials), and with the end of the civil war there was a great interest for research about ecological and biological diversity issues, although the studies are very focused in some protected areas and the results of such studies are not always published.

Finally, although it was not possible to establish the presence of Baird's tapir in the studied area through this survey, further attempts must be considered using other complementary methods (like camera traps) and also through systematically covering the whole National Park. We realize that the burden of proof will always be there: finding no tapirs or tapir evidence always leaves the open possibility that they may still be out there, whereas to prove their presence it only takes one verifiable record. But because the habitats we observed are conducive to hosting a tapir population, and because the possibility and means exist for immigrants from Guatemala to enter these areas in El Salvador, we think the chances are high that the previous reports are correct and contend that further effort must be made to verify them. By the same token, we urge cooperative work with Guatemalan scientists and authorities to determine if a corridor exists between forests in both countries. If such corridor can be confirmed, it should be considered a conservation priority, especially within

the scope of the unique international conservation tool of Central American countries, namely the Corredor Biológico Mesoamericano.

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# Conservación en Ecotonos Interculturales y Transfronterizos: La Danta (*Tapirus bairdii*) en el Parque Internacional La Amistad, Costa Rica-Panamá

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## Abstract

We sought to strengthen the management and conservation efforts present in La Amistad International Park, between Costa Rica and Panama. We pursued our goal by means of a study of the conservation status of a flagship species, the Tapir (*Tapirus bairdii*), with the participation of environmental authorities of both countries, together with rural and indigenous local communities. We studied tapir fecal samples, predator activity, track surveys and habitat use. We conducted interviews of local residents on wildlife use, participant observations and multi-stakeholders participative workshops. In this interdisciplinary effort we identified key areas for species conservation, along with political and socio-cultural opportunities for fostering an integral alternative conservation.

## Resumen

En la búsqueda por fortalecer la gestión y los esfuerzos de conservación en el Parque Internacional La Amistad, entre Costa Rica y Panamá. Nosotros hicimos un estudio sobre el estado de conservación de la danta (*Tapirus bairdii*), especie insignia, con la participación de autoridades gubernamentales de ambos países, junto con las comunidades locales rurales e indígenas. Estudiamos muestras fecales, actividades depredadoras, transectos para huellas y uso del hábitat. Además hicimos observaciones participantes, entrevistas a residentes locales sobre el uso de la fauna y talleres de multi-partícipes. En este esfuerzo interdisciplinario nosotros identificamos las áreas importantes para la conservación de la especie, junto con las oportunidades líticas y socio-culturales por fortalecer una conservación integral alternativa.

**Key words:** conservation, indigenous people, tapirs, Biosphere Reserve, trans-boundary parks, environmental politics, La Amistad International Park

**Palabras claves:** conservación, indígenas, dantas, Reserva de la Biosfera, parques transfronterizos, políticas ambientales, Parque Internacional La Amistad

## Introducción

El Parque Internacional La Amistad (PILA), con 191.647 hectáreas en Costa Rica y 207.000 hectáreas en Panamá, es el parque nacional más grande en estos países, y forma un área continua de cobertura forestal y hábitats que alberga una importante biodiversidad y una significativa representación de etnias locales. Por su tamaño y relieve, el PILA posee varios microclimas y tipos de bosque representativos de ambos países y de la región (Figura 1). Culturalmente, el PILA está rodeado por comunidades indígenas *Bribís* y *Cabécares* del lado costarricense, y *Teribes* y *Ngöbes* del lado panameño; en algunos casos éstas viven dentro del parque y mantienen vías de comunicación. En el pasado, estas comunidades tenían importantes áreas de cacería y de respeto sagrado; para ellas las dantas tenían un profundo valor sagrado y simbólico. A su vez, el PILA es el área núcleo de la Reserva de la Biosfera La Amistad (RBA), la cual ha sido incorporada al Patrimonio Mundial de la UNESCO y sus zonas de amortiguamiento están compuestas por un conglomerado de áreas protegidas y territorios indígenas.

Estudio buscó fortalecer la gestión del PILA usando la danta como especie insignia indicativa del desarrollo rural y del estado de la biodiversidad. Efectuamos una investigación ecológica para conocer la abundancia, dieta, ámbito de hogar y áreas importantes para la sobrevivencia de la danta. Adicionalmente,

fomentamos la participación de los pobladores locales en la investigación y diálogo de conservación, e involucramos a pueblos indígenas, comunidades campesinas locales, autoridades ambientales nacionales (Autoridad Nacional del Ambiente de Panamá – ANAM – y el Ministerio de Ambiente y Energía de Costa Rica – MINAE) y una organización no-gubernamental internacional (Conservation International).

Grupamos nuestros resultados en tres secciones: i) la percepción de la conservación de la danta por etnias indígenas (personas claves en las localidades Kekoldi, Yorkín, Agua Salud, Tayní y Cabagra, complementada con resultados de investigaciones previas y fuentes bibliográficas) y campesinos; ii) la ecología de la danta; y iii) información integral socio-ambiental para la conservación en los ecosistemas interculturales y transfronterizos. Discutimos una percepción sobre el rol de los organismos ambientales en la promoción de una efectiva conservación, y aportamos nuestra una visión sobre conservación integral alternativa.

## Métodos

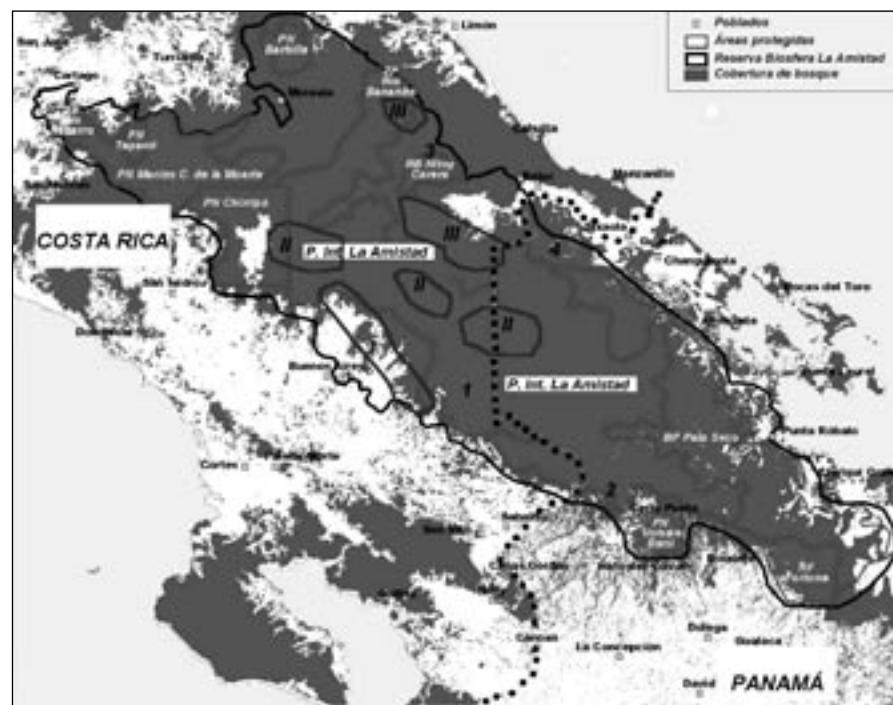
**Protocolo social:** Hicimos giras, conversaciones informales (Ander-Egg, 1991), observación participante (Taylor y Bogdan, 1998) y charlas brindadas en centros docentes y asociaciones sociales de la zona. Entrevistamos a líderes comunales, cazadores, investigadores y funcionarios gubernamentales sobre la importancia de especies grandes como la danta y compilamos historias, tradiciones culturales y problemas ambientales en las comunidades de Kekoldi, Yorkín, Agua Salud, Cabagra, Potrero Grande, Tres Colinas, Altamira, Hitoy Cerere y Cerro Punta. Efectuamos 15 entrevistas, numerosas conversaciones informales, siete charlas interactivas y participamos en cuatro eventos científicos obteniendo la retroalimentación de los asistentes, entre otros. Hicimos además charlas para escolares. A través de panfletos informativos y documentos técnicos difundimos este trabajo en Costa Rica, Nicaragua, Panamá, Belice y Holanda (Carbonell y Torrealba, 2005a).

**Protocolo ambiental:** Realizamos giras, conteo de rastros en transectos, colecta de heces y observación directa (Burnham *et al.* 1980, Naranjo, 1995a, Naranjo, 1995b, Glanz, 1991, Jorgenson, 1993). La investigación se



**Figura 1.** Río Yorkín, territorio indígena Costa Rica, Panamá.

llevó a cabo en cuatro sectores del PILA seleccionados de acuerdo a su acceso, zonas fronterizas, áreas con y sin presión de cacería y conocimiento de la zona. Los sectores fueron: 1) Pacífico y Caribe, sendero Altamira – Valle del Silencio, ubicado dentro del PILA, Costa Rica; 2) Pacífico, sector Cerro Punta, ubicado dentro del PILA, Panamá; 3) Caribe, Reserva Biológica Hitoy Cerere, fuera del PILA, Costa Rica; y 4) Caribe, Territorio indígena Bribri Yorkín, fuera y dentro del PILA, Costa Rica y Panamá (Figura 2).



**Figura 2.** Sectores de muestreo y zonas de manejo en la RBA: Reserva de la Biosfera La Amistad, Costa Rica, Panamá.

## Resultados y Discusión

Los resultados siguientes se obtuvieron tras 182 días efectivos en campo y 18 días en eventos especiales fuera del área de estudio (de enero/2004 a septiembre/2005).

### i) Percepciones sobre la Conservación de la Danta

**Percepción indígena:** De acuerdo a la percepción cultural de etnias *Bribris* y *Cabécares*, el PILA del sector costarricense era antiguamente territorio indígena. Los “awapa”, especialistas en medicina tradicional, cuentan la historia y el futuro del pueblo indígena, y por ellos se sabe que la danta para los *Bribris* y el jaguar para los *Cabécares*, cumplen una función simbólica importante dentro de la cosmovisión indígena. Sólo algunos clanes tenían permitido matar a la danta, respetando ciertas normas. La danta y el jaguar simbolizan una deidad madre de los indígenas y un espíritu poderoso con poderes espirituales sobre la naturaleza. En el PILA del lado panameño habitan las etnias *Nasos* y *Ngöbes-Buglé*, con territorios llamados “comarcas.” Ellos mantienen también vínculos culturales muy fuertes con la vida silvestre, expresada en danzas, leyendas, prestigio para el cazador y en la “balsería”, deporte cultural *ngöbe*. Las dantas son vistas como opción de alimento proteínico que ayuda a la sobrevivencia de muchas familias por la gran cantidad de carne que produce.

**Percepción campesina:** Principalmente en la vertiente Pacífica de Costa Rica existe una fuerte inclinación hacia el turismo; se ve al PILA y la presencia de la danta como oportunidad para atraer turismo natural a la zona y, por consiguiente, mejorar los ingresos económicos familiares. Los lugareños relacionan automáticamente parque y dantas con ingresos del turismo (Figura 3). La cacería de dantas en esta región no es fácil por las grandes extensiones del área, relieve abrupto y por el comportamiento muy evasivo de la especie; sin embargo, la cacería fue frecuente en el pasado, y todavía hoy ocurre, aunque muy eventualmente.

**Nuestra percepción sobre el rol de los organismos ambientales para una efectiva conservación:** Faltan recursos para la capacitación de las autoridades ambientales gubernamentales y capacitación e interés de los funcionarios e investigadores en el PILA para manejar los conflictos y las percepciones de las personas locales. Urgen talleres de capacitación a todos los funcionarios en aspectos de sensibilidad social y ambiental, co-manejo, y dinámicas para la socialización de la

información. Por lo general, el funcionario de “control” no está preparado para apoyar esfuerzos de educación ambiental en la zona. Existen agrupaciones que están trabajando de manera coordinada, sin embargo muchas veces no son autosuficientes y necesitan de recursos externos. . Por otra parte, comentarios falsos escuchados en las comunidades acerca de investigadores con «necesidad de matar una danta para alimentarnos de ella» implican un gran desconocimiento de lo que es el PILA y las investigaciones.

**Una mirada al futuro:** Un bosque sin sus animales cambia debido a las relaciones ecológicas entre la fauna y la flora, como la diseminación de semillas, la polinización y el mantenimiento de algunas especies (Glanz, 1991; Valdez, 2004). En los territorios indígenas la danta es escasa, por ello, la cacería de ser necesaria debiera promoverse de forma no dañina para el bosque, ni para las futuras generaciones. Al nivel indígena la cacería, además de ser una práctica cultural milenaria y de sobrevivencia, es una forma de utilizar la biodiversidad. Pensamos que algunas prácticas y conocimientos indígenas podrían ayudar a reforzar la conservación en las áreas protegidas y en los territorios nativos, convirtiendo a etnias locales en verdaderos custodios y co-manejadores de tales áreas, al tiempo que se promueve un uso sostenible de la biodiversidad. Al nivel campesino rural, apreciamos que las comunidades no están adecuadamente informadas sobre los intereses del PILA, de los funcionarios ambientales, ni de los investigadores; y viceversa. En cuanto a los organismos ambientales, observamos una profunda separación de la percepción comunitaria sobre el uso de la vida silvestre y los funcionarios ambientales. No obstante, existen esfuerzos en ambos países para fortalecer la conservación en el PILA, tales como el proyecto AMISCONDE que busca la producción agrícola sostenible y la evaluación de biodiversidad en las fincas agroforestales. También, comités locales de corredores biológicos, agricultura orgánica y control de cacería e incendios son iniciativas importantes en el Pacífico costarricense y panameño. En el lado del Caribe predominan las reservas y comarcas indígenas con las que urge implementar medidas endógenas de co-manejo y gestión apropiada sobre los usos de la biodiversidad y buscar opciones a la cacería no sostenible.

### ii) Ecología de la Danta

**Dieta:** La danta se alimenta de hierbas, frutos, cortezas y hojas de diversas plantas de sotobosque en áreas ubicadas en potreros abandonados, ciénagas, claros naturales de bosque y bosques secundarios cercanos a quebradas de agua en el PILA. Las principales plantas

encontradas fueron *Chusquea spp.* (Poaceae), *Quercus spp.* (Fagaceae), *Miconia spp.* (Melastomataceae), *Philodendron spp.* (Araceae), la corteza de un arbusto de la familia Araliaceae, brotes de helecho arborescente (*Cyathea spp.*), plántulas de Smilacaceae y moras silvestres (*Rubus spp.*), entre otros. Al encontrar germinación de semillas en excremento de danta, confirmamos que la danta contribuye al traslado de semillas a ambientes favorables, lo cual contribuye junto a su activa labor de ramoneo a mantener la diversidad en la zona (Valdez, 2004; Naranjo, 1995b).

**Distribución:** Debido a la gran extensión del parque y lugares remotos que frecuenta la danta, los animales no se observan fácilmente en el PILA, aunque existen sectores donde son muy frecuentes. En esta investigación, la danta abundó más en sectores con bosque primario y ciénagas del PILA, como el Valle del Silencio (área a 2.500 msnm), y en los bosques secundarios; fue escasa en bosques primarios de roble (*Quercus spp.*). En el período de sequía o pocas lluvias ("verano"), la danta tiende a ampliar su rango de acción y en ciertas ocasiones se han reportado dantas en cafetales cerca de áreas protegidas. Las investigaciones enfatizan que las principales variables para la presencia de dantas son la disponibilidad de comida y de agua, por ello frecuenta los bosques secundarios cercanos a fuentes de agua, en busca de vegetación abundante y brotes tiernos del sotobosque; sin embargo, aparentemente requiere de bosque primario para su reproducción y sobrevivencia (Carbonell y Torrealba, 2005a).

**Uso de hábitat:** Se ha estimado un ámbito de hogar en promedio de 107 hectáreas para dantas en un bosque húmedo tropical de partes bajas en el Parque Nacional Corcovado, y de 160-181 has para un bosque seco en el Parque Santa Rosa (Foerster, 2001, Williams, 1984). Nuestros resultados indicaron que la danta hace uso de los hábitats de manera preferencial. Por ello se seleccionaron las variables época (lluviosa o seca), meses, años, sectores y hábitats para ser comparados entre sí con relación al promedio del número de huellas por Km encontrado (Naranjo 1995a). Para el análisis se utilizó un modelo log-lineal univariado, y determinamos que los meses, el hábitat y los sectores explican un 85.5% de la varianza en la presencia de huellas ( $F=6.717$ ,  $P < 0.001$ ). Hubo diferencias significativas entre hábitats ( $F=5.077$ ,  $P < 0.05$ ) y entre sectores ( $F= 23.32$ ,  $P < 0.001$ ), pero no entre meses ( $F=0.775$ ,  $P=0.64$ ).

**Abundancia en Costa Rica:** Conocer la cantidad de dantas en el país nos permite predecir escenarios para la conservación futura de importantes hotspots, por eso varios investigadores han tratado de estimar el



**Figura 3. Dibujo de María Isabel Cordero Marín (2004), Liceo El Carmen, donde representa la importancia de la danta para su comunidad.**

tamaño poblacional de esta especie. Williams (1984) estimó una población de dantas para todo Costa Rica entre 1.800 y 3.500 individuos distribuidos en las áreas protegidas del país, mientras que (Brooks *et al.*, 1997) indican unos 1.000 para todo el país unos años después. Si consideramos al primer autor, hace unos 20 años en Costa Rica había unas 5.000 dantas, de las cuales aproximadamente la mitad estaba dentro de áreas protegidas (unas 2.650). Con la técnica de Valdés (2004) y otras estimaciones (Carbonell *et al.*, 2001), estimamos la población actual del país en 3.483 individuos, de las cuales un 90% (3.153) está en las áreas silvestres protegidas y un 21% dentro del PILA-sector costarricense (728). Considerando que el PILA forma parte de la Reserva de la Biosfera La Amistad (RBA), un conglomerado de áreas protegidas y territorios indígenas con una extensión de 349.150 hectáreas en Costa Rica, calculamos que para el país casi el 40% (1.365) de las dantas sobreviven en la RBA. Así, un 40% de la población de la especie reside en este 6,8% del territorio nacional y otro 50% se encuentra en un 8,9% del territorio protegido. Hace poco más de 20 años el 50% de la población de la especie residía en terrenos silvestres no protegidos y hoy el 90% de la población de dantas se encuentra en apenas un 15,7% de la superficie del país, área conformada exclusivamente por ciertas áreas protegidas.

**Una mirada al futuro:** El área mínima requerida por pareja de dantas es de 2,14 km<sup>2</sup> (Foerster, 2001). Para conservar unas 1.000 parejas de dantas se necesitan unas 214.000 hectáreas, por lo cual el PILA con alrededor de 400.000 hectáreas entre los dos países,

podría estar asegurando la viabilidad futura de la especie. Cuando señalamos los tamaños requeridos no debemos perder de vista que son *estimaciones*. Nuestro dato de área no es un estimado estadístico del tamaño requerido para conservar la especie, pero es más que una unidad mínima de conservación. Si consideramos que la población de dantas de la RBA representa casi el 40% del total de dantas en Costa Rica; podríamos decir que la población de *dantas* en el PILA es de una *importancia biológica vital* y que una buena gestión de la misma es crucial no sólo para la danta, sino para la biodiversidad de este país.

### iii) Los Sociotonos de la Conservación

**Protocolo social-ambiental:** Para intentar llenar los vacíos metodológicos de interdisciplinariedad elaboramos gráficos, promovimos representaciones artísticas y efectuamos talleres de multi-partícipes inclusivos de género y equidad. Así, respaldamos nuestra propuesta a través de imágenes, mapas y diagramas (Carbonell y Torrealba, 2005b) en la búsqueda de una efectiva integración sociológica y ecológica para la conservación promotora del desarrollo rural sostenible.

**Asimetrías de la conservación en los sociotonos entre vertientes, culturas y fronteras:** Pese a que la cordillera de Talamanca (que alberga el PILA) forma una única unidad ecológica, hay diferencias socioeconómicas y culturales entre ambos países donde se encuentra, y hay similares asimetrías entre las vertientes del Caribe y del Pacífico. Panamá destaca por la calidad y conservación de sus ecosistemas en zonas de tierras altas y medias del caribe (500-3000 msnm), y Costa Rica en zonas de elevada altitud (mas de 2.000 msnm) únicamente. En Costa Rica, el PILA conserva principalmente los ecosistemas de altura y del Caribe, como el cerro Kámuk y el Valle del Silencio, que constituyen un refugio importante para las dantas y jaguares en sus partes altas (zona II, Figura 2). En cambio, los ecosistemas de altitud media del pacífico costarricense (500 – 1.000 m.s.n.m.)-muy importantes por su gran diversidad y estacionalidad- están desprotegidos y no están representados en el Sistema Nacional de Áreas Protegidas, como por ejemplo la Cuenca del Río Mosca; sin embargo tanto en Costa Rica como Panamá se está dando un fuerte impulso al turismo en esta zona (zona I, Figura 2). En Panamá, la zona Caribe del PILA es importante por la presencia de algunas especies con poblaciones afectadas en el lado costarricense, tales como el chancho de monte o

de labios blancos (*Tayassu pecari*) y el águila harpía (*Harpia harpyia*). (zona II, Figura 2).

Por otra parte, ambos países tienen un fuerte componente indígena en la zona del PILA. (zona III, Figura 2). En Panamá éstos viven dentro del parque en la comarca Naso-Teribe y dos poblados Ngöbe; en Costa Rica hay viviendas indígenas aisladas dentro del PILA en el sector caribe y senderos indígenas dentro del mismo. Su aspecto social varía igualmente, los indígenas de Panamá sufren de pobreza extrema y los de Costa Rica, si bien son considerados pobres, tienen acceso a servicios de salud, transporte y educación. En esta zona hay una severa pérdida de especies amenazadas. Por ello, se sugiere una reflexión sobre la necesidad de que los Planes de Manejo y Conservación incluyan, además de un monitoreo o seguimiento, una integración de los aspectos socio-económicos con los ecológicos, para que haya una trascendencia fronteriza vía convenios internacionales en pro de una efectiva conservación para un desarrollo sostenible (Carbonell y Torrealba, 2005b).

**Incidencias en políticas para la conservación:** Sobre la implementación de la gestión para la conservación, apreciamos que Costa Rica tiene una política ambiental fortalecida que se refleja en los recursos invertidos en Áreas de Conservación del MINAE, a diferencia de Panamá que tiene menos recursos y no tiene un ministerio ambiental sino un instituto, que es la Autoridad Nacional del Ambiente. Informes del lado panameño refieren de fincas ganaderas dentro del parque y caminos utilizados para transportar ganado entre la vertiente del Pacífico y del Caribe en el PILA (ANCON y Consultores Ecológicos 2004). Asimismo, se observa en la vertiente del Pacífico en ambos países la compra de tierras por extranjeros con conciencia preservacionista e interés por el turismo. Este acelerado fenómeno puede traer efectos favorables para la conservación pero consecuencias socioculturales adversas en las áreas urbanas o asentamientos “ilegales” en áreas de conservación sensibles a la degradación ambiental. De allí la importancia de conocer mejor la situación de la danta en la cordillera de Talamanca para reforzar sus políticas de conservación.

Nuestra visión - una conservación integral alternativa: La Reserva de la Biosfera La Amistad es parte del Patrimonio Mundial, donde tanto la importancia de la diversidad cultural como la diversidad biológica deben ser vistas de manera integral. El hecho de que actualmente exista gran preocupación por la cacería en territorios indígenas que han llevado al borde de la extinción a ciertas especies de fauna no implica descuidar que parte de esto ha sido ocasionado por fuertes presiones de carácter político y económico. Sabemos que los indígenas habitan áreas boscosas importantes

pero han sido confinados a áreas poco productivas, rodeados por plantaciones bananeras y pueblos campesinos; actualmente no poseen alternativas viables para revertir la tendencia de extinciones biológicas en sus territorios y, por ende, de su propia extinción cultural. Ambos, indígenas y especies de vida silvestre, deben ser ponderados para la conservación de la biodiversidad.

Hoy es menester integrar a las áreas de propiedad privada y a los territorios indígenas en la gestión para la conservación de la vida silvestre y de las áreas protegidas. Poblaciones de dantas en ciertas áreas nucleares protegidas de la RBA están confrontando serias amenazas. Así, tanto el Parque Nacional Barbilla como la Reserva Biológica Hitoy-Cerere deberían no sólo estar conectadas con áreas de cobertura boscosa, sino trabajar en conjunto con las comunidades campesinas e indígenas para que actúen como centros de protección de fauna silvestre amenazada, y responsables de la misma; no sólo como extractores. Para que ello suceda, se deberían promover medios de economía alternativa o programas tipo “Bandera Azul Ecológica” o “Pago de Servicios Ambientales” (Segura y Moreno, 2002) (ambos sistemas presentes en Costa Rica desde hace varios años), pero enfocados hacia las especies de fauna silvestre amenazadas o en peligro de extinción.

A través de este estudio detectamos la presencia de dos áreas prioritarias para enfocarse a una conservación alternativa integral, ambas ubicadas a mediana altitud (500-1000 metros): 1- los últimos reductos de los ecosistemas estacionales del Pacífico en asentamientos campesinos, amenazados por incendios y utilizados por las dantas eventualmente, y 2- los ecosistemas del Caribe en territorios indígenas con una baja sensible de fauna cinegética, discriminación social severa y un lazo ancestral entre la cultura y la biodiversidad (Zonas I y III, Figura 2). La conservación del PILA por su lejanía e inaccesibilidad depende de la integración de las comunidades indígenas y campesinas con la visión ecológica, por ello deberían integrarse los conocimientos científicos y tradicionales, el ecoturismo rural, la educación en el uso de la biodiversidad con una visión futurista, las políticas transfronterizas y los esfuerzos por hacer integraciones multi-partícipes.

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## The Asian Tapir in Jambi Lowland Forest and Commercial Landscape

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### Abstract

**T**his study was conducted in an oil palm plantation that borders a forest logging concession in Jambi province, Sumatra. Data were collected during 2003-2004 by using a camera trap grid combined with a tiger camera trap survey and transect sampling for animal tracks. The camera grid shows the presence or absence of tapirs in three distinct habitat types: an oil palm plantation, deforested areas (unplanted oil palm trees mixed with shrubs) and forest. Transects provide an index of abundance of the Asian tapir (# of tracks per 1 km of transect). Results from both these methods indicate that tapirs use forested and deforested habitats, but seem to avoid oil palm plantations. This result suggests a possible threat to tapir populations in Sumatra if oil palm plantations continue to spread.

It often wanders outside forested areas (Novarino *et al.* 2004) and in many parts of its range it occurs outside protected areas (Meijaard & Van Strien 2003). Commercial landscapes, including oil palm plantations and logging concessions, may therefore be important habitats for Asian tapirs.

We used two different techniques to study Asian Tapir. The techniques used were camera trapping and transects to record the frequency of animal tracks. These techniques were used in an analysis of the temporal fluctuation in the sightings and tracks of the Asian tapir. The Camera trapping effort will enable us to determine the presence/absence and distribution of Asian Tapir within study site; the transect records enabled us to formulate an index of relative density of Asian tapirs within the commercial landscape.

### Introduction

Sumatra and Peninsular Malaysia represent the world's stronghold for the Asian tapir (Novarino *et al.* 2004). The Asian tapir is an elusive animal, primarily nocturnal; it is most commonly seen in the dry season and moves into mountainous areas with the onset of the rainy season (Holden *et al.* 2003; Colbert 2003; Novarino *et al.* 2004). In Sumatra the species is found in at least seven of eight provinces (Holden *et al.* 2003).

### Materials & Methods

#### Study Area

The study was carried out in Jambi Province, at the oil palm plantation PT Asiatic Persada (27,000 ha in size), which borders a forest logging concession (PT Asialog). The study site is approximately a two-hour drive southwest from Jambi city (Figure1). PT Asiatic is still active, and currently PT Asialog is transferring management to PT REKI (Restorasi Ekosistem Indonesia), a consortium comprising Burung Indonesia, the Royal



**Figure 1. Location of the study site in Jambi province, Sumatra island.**

Society for the Protection of Birds (UK), and BirdLife International, created to manage and restore an area of lowland forest located across the Indonesian provinces of South Sumatra and Jambi.

The habitat of the study site is defined by deforested lowland forests, which are predominantly oil palm plantation, deforested land and commercial forest. These three habitats were therefore used to define the differing habitats within the study area. The oil palm plantation is a habitat comprised of oil palms interspersed by shrubs. The deforested habitat is located inside the oil palm plantation and comprises areas denuded of trees and not planted with oil palm trees; it is characterized by dense shrubs and self-seeded trees. The forest habitat comprises the forests inside the logging concession.

Although the oil palm plantation and logging concession forests are not ideal for wildlife, endangered and threatened species still use and live in these habitats, such as Sumatran tiger (*Panthera tigris*), Asian tapir (*Tapirus indicus*), Clouded leopard (*Neofelis nebulosa*), Dhole (*Cuon alpinus*), Pangolin (*Manis javanica*), Sambar (*Cervus unicolor*), Muntjac (*Muntiacus muntjak*), Malay civet (*Vivera tangalunga*) and Banded palm civet (*Diplogale derbyanus*) (Maddox *et al.* 2004).

### Camera Traps

Camera trapping is the most appropriate method for mammal inventory in all environmental conditions (Silveira *et al.* 2003). We used the CamTrakker camera traps, which were placed in the three distinctive habitat types. The camera trapping method was used to ascertain the presence/absence of Asian tapirs in each habitat of the study site by using a randomly placed grid (Figure 2).

The points in the grid were located by using the waypoint number from the Global Position System (GPS). There were 16 camera traps in each grid set out in 4 rows of 4 cameras each, with cameras placed at an ideal site within 100 m of the random point to maximise the chances of photographing animals. Cameras were placed 500m apart from each other. The camera traps were positioned in the field for a month. Each was maintained weekly by checking trigger sensitivity (e.g., cleaning spider webs which would block the sensor), cleaning the window lens, checking battery power and also changing the films if they had run out.

Some cameras, referred to in the text as "tiger cameras," were used to target tigers (as part of the Jambi tiger project) and were set up on tracks with known tiger activity, particularly at path junctions to maximise the chances of photographing a tiger passing (Maddox *et al.* 2004). The tiger camera traps were set up permanently, primarily for monitoring tigers, but were triggered by and record other large animals.

Films were collected during camera trap checks. These were developed as negatives, then scanned and studied for data entry. Individual tigers and other animals (including tapirs – Novarino *et al.* 2005) can be distinguished based on fur colour patterns and other distinctive features, such as scars or cuts. The number of tapirs occasions from the camera trapping grid and tiger camera traps showed us where tapirs were most commonly found and their activities in the three habitat types.

### Transects

Transect counts were chosen as an additional method for studying the Asian tapirs at the study site by recording the frequency of footprints along transects; these counts could be used to calculate an index of relative density. Transects were set up on old logging road with varied in length from 1 km to 8 km; habitat types were also unevenly sampled. The average number of transects walked per month in the oil plantation habitat was 11.7 km (range: 0 - 21.6 km), the average for forested areas was 130.6km (range: 5.6 - 255.6 km), and for deforested areas an average of 171.6 km transects per month (range: 23 - 327 km). We sampled the oil plantations less often than the other habitat types because we soon realized tapirs were never seen there and opted to put more effort sampling the other habitat types (see results below). On average, 306.5 km of transects were walked each month. Each transect was given a unique number, and had a start and end point which were identifiable GPS waypoints. At least two people, in a team, walked each transect at a normal speed (1 km/hr); on several occasions more than one team walked a transect in a given day.

## Results

### Camera Traps

The camera traps within the grid were operated from April 2003 – April 2004. Sampling with grid camera traps resulted in few Asian tapir photos; most photos of tapirs were captured on the tiger camera traps.

There were a total of 17 camera locations, in both grid and tiger camera traps, from which photographs of Asian tapirs were obtained. At these 17 locations a total of 53 photographs were taken (Figure 3). Within the grid, a total of 12 photos of tapirs were taken in 3 separate locations. This represents 22.6 % of total photographs taken in 17.6 % of the total photograph locations. Of the photographs taken in the grid, 83.3 % were taken in forest and 16.7 % in deforested habitat. Allowing for more intensive camera trapping regime in the forests, tapir activity appears highest in this habitat type.

Within the tiger camera setup, a total of 41 tapir photographs (77.4 %) were taken at 14 (82.4 %) of total camera locations. Just looking at the 14 tiger camera trap locations and the associated photographs, 56 % of photographs were taken in deforested habitat and 44 % in forests. No photographs of tapirs were taken in oil palm plantations.

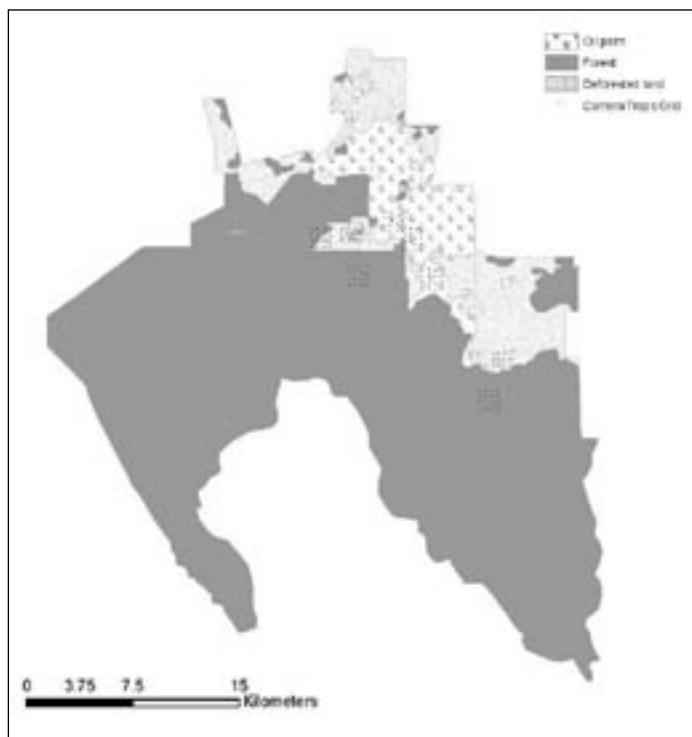
Camera traps data indicate that the Asian tapir is mostly captured during night-time (Figure 4), corroborating the nocturnal habit of the species. Accordingly, highest tapir activity occurs between 19.00-00.00 and 03.00-05.30, with a lower activity level between 00.00-03.00.

The mean number occasions of Asian Tapir passed through camera traps placement show was highest in July 2003 and May 2004 which where in deforested and forest habitat types. The data is the combined results from the tiger camera and grid camera traps data. The dry season starts from May to September, and the wet season between November to March, which means that tapir sightings are highest in the dry season for both habitat types which also shows that tapirs activities in these habitat types seem doesn't affect with seasonal change.

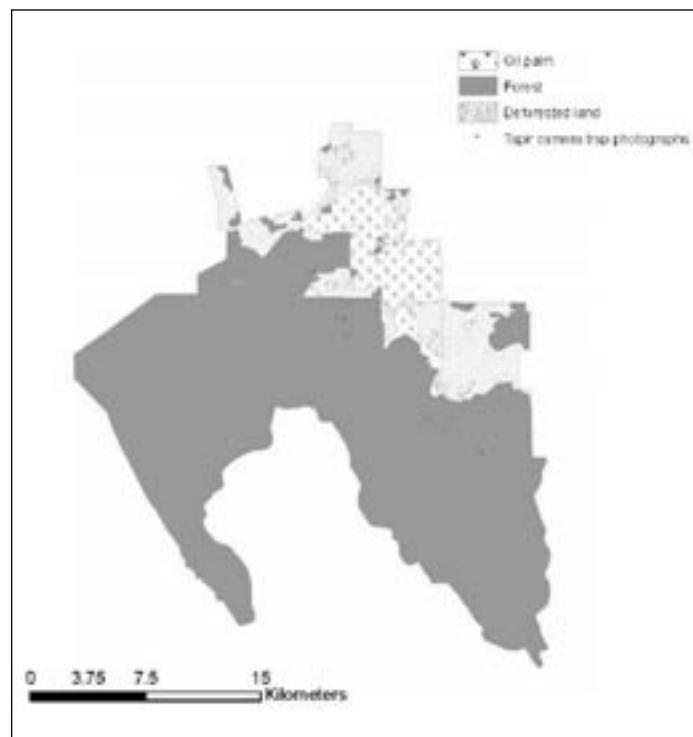
### Transects

The total distance of transects walked was 6933.4 km. Within these transects, there were 478 tapir tracks recorded. On average, the number of tapir tracks seen was 0.07 per km walked.

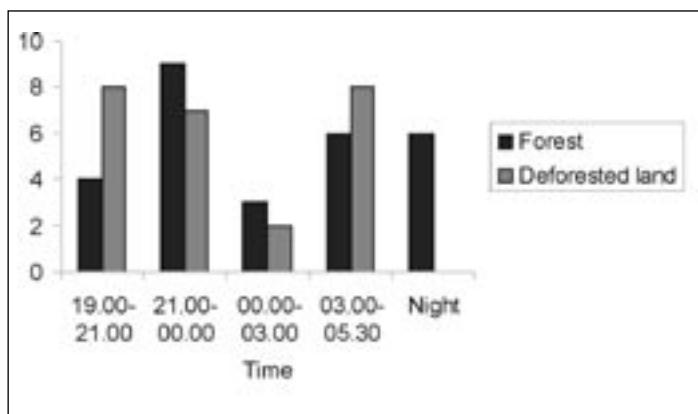
Figure 5 also shows that the mean number of Asian tapir tracks found in transect walks is about the same between the rainy and the dry season. We found no



**Figure 2. Location of the nine randomly placed camera trap grids. Each grid is made of 16 camera traps (4 x 4).**

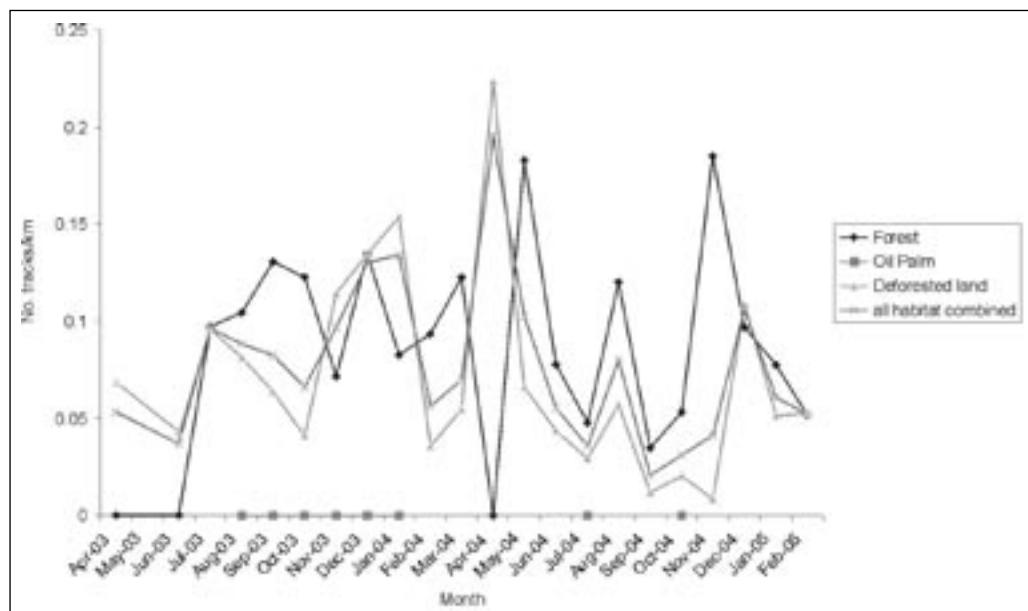


**Figure 3. Location of tapir photographs in camera traps.**



**Figure 4.** Tapir photographs during night time in each habitat type. The “night” bar reflects records without time but known to have happened at night.

evidence of tapirs occurring in the oil palm plantation. All tracks were found in the deforested and forest habitats. It is possible that the frequency of tracks seen in the field relates to the seasonal weather change in Sumatra. In the forest habitat tapir abundance was highest (0.18 tracks/km) in May '04 and November '04. No tracks were seen in June 03 and April 04. In the deforested habitat the highest frequency values occurred in January '04 and April '04 (0.15 and 0.2 tracks/km respectively). The lowest index value occurs in September '04 and November '04, (0.011 and 0.008 tracks/km, respectively).



**Figure 5.** Number of Asian tapir tracks per km seen each month in transect walks for each habitat type.

## Discussion & Conclusions

There were no photos or tracks of tapirs found in the oil palm habitat (Figures 3 & 5). This could mean that tapir does not use the oil palm habitat and prefers to use the forest and deforested habitats. There are no reports from local workers that tapirs damage the oil palm saplings or trees, indicating that the species might avoid this habitat type. If the numbers of oil palm plantations increases, it will lead to habitat loss and probably to further decline of the Asian tapir populations (Kinnaird et al. 2003).

Photographic trapping is a very successful method for gathering evidence on the biology of the Asian tapir, an animal that is difficult to study (Holden et al., 2003). The Asian tapir is a very elusive species - during the patrol transect none of the survey teams saw the tapirs. The only one seen was an opportunistic sighting on one evening when one team saw a tapir whilst returning from radio tracking tapirs in the field. It's potential a good idea to use the camera trapping methods combined foot prints transect method to collect the evident of Asian Tapir as an elusive animal.

The 17 camera locations, with total 53 photographs of tapir, show that 52.8% of the tapirs were recorded in the forest habitat and 47.16% in the deforested habitat. From these results it can be concluded that tapirs used both of the habitats (forest logging concession and deforested areas in plantations) (Figure 3). Our highest track indices throughout the year alternated between these habitats. This shows that tapir live and used these two habitats, which mean that they are important for tapir distribution and conservation.

The index of abundance (tapir tracks/km – Figure 5) of the Asian tapir was highest in April 2004 where an overall density of 0.19 tapir tracks per km walked was recorded, despite walking only 32 km of transects that month. This result could be because the tapir tracks are seen more easily in the deforested areas than in forests or oil palm habitats; we did not sample in oil palm habitats, and only walked 9 km in the forests, that month.

The data were collected during the 2003 and 2004, and so it is still difficult to conclude if these results are representative of tapir activity and abundance in the commercial landscape.

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### **Scope**

This newsletter aims to provide information regarding all aspects of tapir natural history. Items of news, recent events, recent publications, thesis abstracts, workshop proceedings etc concerning tapirs are welcome. Manuscripts should be submitted in MS Word.

### **Deadlines**

There are two deadlines per year: 31 March for publication in June and 30 September for publication in December.

Please include the full name and address of the authors underneath the title of the article and specify who is the corresponding author.

**Full length articles** on any aspect of tapir natural history are accepted in English, Spanish or Portuguese language. They should not be more than 5,000 words (all text included). In any case, an English abstract up to 250 words is required.

### **Figures and Maps**

Contributions can include black and white photographs, high quality figures and high quality maps and tables. Please send them as separate files (formats preferred: jpg, pdf, cdr, xls).

### **References**

Please refer to these examples when listing references:

#### **Journal Article**

Herrera, J.C., Taber, A., Wallace, R.B. & Painter, L. 1999. Lowland tapir (*Tapirus terrestris*) behavioural ecology in a southern Amazonian tropical forest. *Vida Silv. Tropicale* 8:31-37.

#### **Chapter in Book**

Janssen, D.L., Rideout, B.A. & Edwards, M.S. 1999. Tapir Medicine. In: M.E. Fowler & R. E. Miller (eds.) *Zoo and Wild Animal Medicine*, pp.562-568. W.B. Saunders Co., Philadelphia, USA.

#### **Book**

Brooks, D.M., Bodmer, R.E. & Matola, S. 1997. *Tapirs: Status, Survey and Conservation Action Plan*. IUCN, Gland, Switzerland.

#### **Thesis/Dissertation**

Foerster, C.R. 1998. Ambito de Hogar, Patron de Movimientos y Dieta de la Danta Centroamericana (*Tapirus bairdii*) en el Parque Nacional Corcovado, Costa Rica. M.S. thesis. Universidad Nacional, Heredia, Costa Rica.

#### **Report**

Santiapilli, C. & Ramono, W.S. 1989. The Status and Conservation of the Malayan tapir (*Tapirus indicus*) in Sumatra, Indonesia. Unpublished Report, Worldwide Fund for Nature, Bogor, Indonesia.

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# Tapir Conservation

The Newsletter of the IUCN/SSC Tapir Specialist Group

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