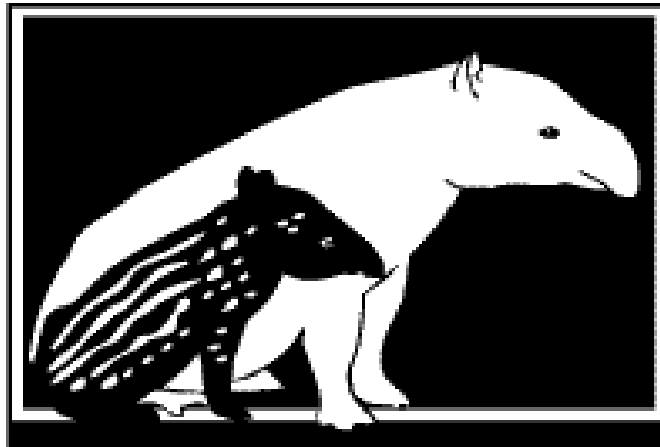


**SYMPOSIUM PROGRAM SCHEDULE AND  
PRESENTATION ABSTRACTS**

**PROGRAMA DE CONGRESO Y  
RESÚMENES DE PRESENTACIONES**

**TAPIR SYMPOSIUM**



**2001 COSTA RICA**

**FIRST INTERNATIONAL TAPIR SYMPOSIUM  
PRIMER CONGRESO INTERNACIONAL SOBRE TAPIRES**

**SAN JOSE, COSTA RICA**

**NOVEMBER 3 - 8, 2001**

**NOVIEMBRE 3 al 8 de 2001**

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# ORGANIZATIONS - ORGANIZACIONES

IUCN Species Survival Commission (SSC) Tapir Specialist Group

American Zoo and Aquarium Association (AZA) Tapir Taxon Advisory Group (TTAG)

Tapir Preservation Fund (TPF)

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## ORGANIZING COMMITTEE - COMITÉ ORGANIZADOR

### **RICK BARONGI**

Director, Houston Zoological Gardens, United States  
Chair, American Zoo and Aquarium Association (AZA) Tapir Taxon Advisory Group  
Member, IUCN/SSC Tapir Specialist Group

### **MICHAEL DEE**

General Curator, Los Angeles Zoo, United States  
American Zoo and Aquarium Association (AZA) Tapir Taxon Advisory Group  
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### **SONIA HERNANDEZ-DIVERS**

Adjunct Professor, College of Veterinary Medicine, University of Georgia  
Veterinary Advisor, American Zoo and Aquarium Association (AZA) Tapir Taxon Advisory Group  
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### **HEIDI FROHRING**

Zookeeper, Woodland Park Zoo, United States  
Member, IUCN/SSC Tapir Specialist Group

### **LEWIS GREENE**

Director, Prospect Park Zoo, United States  
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Director, Veterinary Services, San Diego Zoo, United States  
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### **SHARON MATOLA**

Director, Belize Zoo and Tropical Education Center, United States / Belize  
Member, IUCN/SSC Tapir Specialist Group

### **E. PATRÍCIA MEDICI**

Conservation Biologist, IPÊ - Institute for Ecological Research, Brazil  
Chair, IUCN/SSC Tapir Specialist Group

### **PHIL SCHAEFFER**

Zoologist/Conference Planner and Registrar, Caligo Ventures, Inc., United States

### **BRANDIE SMITH**

Conservation Biologist, American Zoo and Aquarium Association (AZA), United States

### **SHERYL TODD**

President, Tapir Preservation Fund (TPF), United States  
Deputy Chair, IUCN/SSC Tapir Specialist Group

# GENERAL PROGRAM - PROGRAMA GENERAL

DAY	MORNING	AFTERNOON	EVENING
<b>Nov.</b> 3 <sup>rd</sup> Sat	08:30 - 12:00. ARRIVAL AND REGISTRATION	14:00 - 18:00. ARRIVAL AND REGISTRATION	19:00 - 19:30. SLIDE SHOW 19:00 - 20:30. OPENING NIGHT RECEPTION
<b>Nov.</b> 4 <sup>th</sup> Sun	08:30 - 09:00. WELCOME TO PARTICIPANTS 09:00 - 10:00. KEYNOTE SPEAKER 10:00 - 10:30. COFFEE BREAK POSTER SESSION 10:30 - 12:30. PAPER SESSION 1. <u>Ecological Studies 1</u> 12:30 - 14:00. LUNCH	14:00 - 15:30. PAPER SESSION 2. <u>Ecological Studies 2</u> 15:30 - 16:00. COFFEE BREAK POSTER SESSION 16:00 - 17:30. PAPER SESSION 3. <u>Population Management</u>	18:00 - 21:00. SILENT AUCTIONS 19:30 - 20:00. EVENING PRESENTATION 20:00 - 20:30. VERBAL AUCTIONS
<b>Nov.</b> 5 <sup>th</sup> Mon	08:30 - 10:50. PAPER SESSION 4. <u>Veterinary Issues/Diseases</u> 10:50 - 11:20. COFFEE BREAK POSTER SESSION 11:20 - 12:20. KEYNOTE SPEAKER 12:20 - 14:00. LUNCH	14:00 - 15:40. PAPER SESSION 5. <u>Husbandry/Education</u> 15:40 - 16:10. COFFEE BREAK POSTER SESSION 16:10 - 17:40. PAPER SESSION 6. <u>Tapir Bio-Politics</u>	19:00 - 19:45. EVENING PRESENTATION
<b>Nov.</b> 6 <sup>th</sup> Tue	CONFERENCE BREAK		TBC
<b>Nov.</b> 7 <sup>th</sup> Wed	08:00 - 09:20. WORKSHOP 1. <u>Marketing and Media Affairs</u> 09:20 - 10:40. WORKSHOP 2. <u>Tapir Action Plan: review, expand and prioritize</u> 10:40 - 11:00. COFFEE BREAK 11:00 - 12:30. WORKSHOP 3. <u>IUCN/SSC Tapir Specialist Group: future perspectives</u> 12:30 - 14:00. LUNCH	14:00 - 15:30. WORKSHOP 4. <u>Fund Raising</u> 15:30 - 16:00. COFFEE BREAK 16:00 - 18:00. PLENARY SESSION. PLANS FOR ACTION	19:00 - 20:00. KEYNOTE SPEAKER 20:00 - 21:00. FINAL BANQUET DINNER
<b>Nov.</b> 8 <sup>th</sup> Thu	DEPARTURE		

# DETAILED PROGRAM - PROGRAMA DETALLADO

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## DAY 1. Nov. 3<sup>rd</sup>, Saturday

### MORNING

08:30 - 12:00. Arrival and Registration HOTEL LOBBY

### AFTERNOON

14:00 - 18:00. Arrival and Registration HOTEL LOBBY

### EVENING

19:00 - 19:30. **SLIDE SHOW** GONDOLA ROOM  
AREA DE CONSERVACIÓN GUANACASTE, COSTA RICA  
Presentation by Dr. Sonia Hernandez-Divers (United States)

19:00 - 20:30. **OPENING NIGHT RECEPTION** GONDOLA ROOM

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## DAY 2. Nov. 4<sup>th</sup>, Sunday

### MORNING

08:30 - 09:00. **WELCOME TO PARTICIPANTS** CORCOVADO ROOMS 1 and 2

08:30 - 08:40. **Rick Barongi**  
Director, Houston Zoo, United States  
President, AZA Tapir Taxon Advisory Group  
Member, IUCN/SSC Tapir Specialist Group

08:40 - 08:50. **Dr. Sonia M. Hernandez-Divers**  
Adjunct Professor, College of Veterinary Medicine, University of Georgia  
Veterinary Support Coordinator, IUCN/SSC Tapir Specialist Group  
Veterinary Advisor, AZA Tapir Taxon Advisory Group

08:50 - 09:00. **E. Patrícia Medici**  
Conservation Biologist, IPÊ - Institute for Ecological Research, Brazil  
Chair, IUCN/SSC Tapir Specialist Group

09:00 - 10:00. **KEYNOTE SPEAKER** CORCOVADO ROOMS 1 and 2  
(01) HUNTING AND THE DECLINE OF TAPIR POPULATIONS  
**Dr. Richard E. Bodmer**  
The Durrell Institute of Conservation and Ecology, University of Kent, England  
Member, IUCN/SSC Tapir Specialist Group  
Introduction by E. Patrícia Medici (Brazil) (09:00 - 09:05)

10:00 - 10:30. **COFFEE BREAK POSTER SESSION** CORCOVADO ROOM 3

10:30 - 12:30. **PAPER SESSION 1** CORCOVADO ROOMS 1 and 2  
**ECOLOGICAL STUDIES 1** Chair: E. Patrícia Medici

10:30 - 10:40. SESSION INTRODUCTION

10:40 - 10:50. (02) Use of GPS Collars to study Mountain Tapirs (*Tapirus pinchaque*) in the Central Andes of Colombia  
DIEGO LIZCANO (Colombia)

10:50 - 11:00. (03) The use of hunting dogs to capture two *Tapirus pinchaque* in the Central Andes of Colombia  
DIEGO LIZCANO (Colombia)

11:00 - 11:10. (04) Results of a Five-Year Telemetry Study of Baird's Tapir in Costa Rica  
CHARLES FOERSTER (United States)

- 11:10 - 11:20. (05) Foraging Behavior and Diet of a Female Baird's Tapir in Corcovado National Park, Costa Rica  
CHARLES FOERSTER (United States)
- 11:20 - 11:30. (06) Home range characteristics and habitat use of the Baird's Tapir (*Tapirus bairdii*) in Corcovado National Park, Costa Rica  
JORGE VILLALOBOS CESPEDES (Costa Rica)
- 11:30 - 11:40. (07) Feeding habits and impact of human activity on Baird's Tapir in La Sepultura Biosphere Reserve, Chiapas, Mexico  
EPIGMENIO CRUZ ALDÁN (Mexico)
- 11:40 - 11:50. (08) Biology, Ecology, and Conservation of the Baird's Tapir (*Tapirus bairdii*) in Chiapas, Mexico  
EPIGMENIO CRUZ ALDÁN (Mexico)
- 11:50 - 12:00. (09) Ecology and Conservation of Baird's Tapir in the Lacandon Forest, Mexico  
EDUARDO JORGE NARANJO PIÑERA (Mexico)
- 12:00 - 12:10. (10) Habitat use patterns of Baird's tapir (*Tapirus bairdii*) in two localities in the Lacandona rainforest, Chiapas, Mexico  
CARLOS ERIK MUENCH SPITZER (MEXICO)
- 12:10 - 12:30. QUESTIONS

12:30 - 14:00. **LUNCH**

**AFTERNOON**

14:00 - 15:30. **PAPER SESSION 2 CORCOVADO ROOMS 1 and 2**  
**ECOLOGICAL STUDIES 2** Chair: E. Patrícia Medici

14:00 - 14:10. SESSION INTRODUCTION

- 14:10 - 14:20. (11) Population Density and Ecology of Malayan Tapirs in Lowland Forest, Sumatra, Indonesia

RONALD TILSON (United States)

- 14:20 - 14:30. (12) Distribution of Tapirs (*Tapirus indicus*) and comparison with selected herbivores in four different sites

SITI KHADIJAH ABD GHANI (Malaysia)

- 14:30 - 14:40. (13) Evaluation of different methodologies used to capture wild lowland tapirs (*Tapirus terrestris*) in Pontal do Paranapanema Region, São Paulo State, Brazil

E. PATRÍCIA MEDICI (Brazil)

- 14:40 - 14:50. (14) Conservation biology of lowland tapirs (*Tapirus terrestris*) and their potential as 'landscape detectives' at the Pontal do Paranapanema Region, São Paulo State, Brazil

E. PATRÍCIA MEDICI (Brazil)

- 14:50 - 15:00. (15) Ecology and conservation of tapirs (*Tapirus terrestris*) in Emas National Park and surrounding farmland, Central Brazil

ANAH TEREZA DE ALMEIDA JÁCOMO (Brazil)

- 15:00 - 15:10. (16) How long does a tapir track last? Implications for population assessments

ALFREDO D. CUARÓN (Mexico)

- 15:10 - 15:30. QUESTIONS

15:30 - 16:00. **COFFEE BREAK POSTER SESSION CORCOVADO ROOM 3**

16:00 - 17:30. **PAPER SESSION 3 CORCOVADO ROOMS 1 and 2**  
**POPULATION MANAGEMENT** Co-Chairs: Brandie Smith and Lewis Greene

16:00 - 16:10. SESSION INTRODUCTION

- 16:10 - 16:20. (17) Genetic and Demographic Status of Captive Tapirs and the Implications for Management and Conservation

BRANDIE SMITH (United States)

- 16:20 - 16:30. (18) Conservation of Mountain Tapir (*Tapirus pinchaque*) in Colombia

DIEGO LIZCANO (Colombia)

- 16:30 - 16:40. (19) Historical fragmentation of the Central American tapir (*Tapirus bairdii*) habitat in the Lacandona Rainforest, Chiapas, Mexico, and their repercussion for the permanency of the species in the region: a projection in the medium term  
EDMUNDO SÁNCHEZ-NÚÑEZ (Mexico)
- 16:40 - 16:50. (20) The genus *Tapirus* in Venezuela: distribution and suggestions for its conservation  
DENIS ALEXANDER TORRES (Venezuela)
- 16:50 - 17:00. (21) Translocation Experience of Tapirs (*Tapirus terrestris*) in Henri Pittier National Park  
PILAR ALEXANDER BLANCO MÁRQUEZ (Venezuela)
- 17:00 - 17:10. (22) Status of Tapirs in Venezuelan Zoos  
ADRIÁN NAVEDA RODRIGUEZ (Venezuela)
- 17:10 - 17:30. QUESTIONS

## EVENING

- 18:00 - 21:00. **SILENT AUCTIONS** CORCOVADO ROOMS 1 and 2  
FUNDRAISING FOR THE GUANACASTE CONSERVATION AREA
- 19:30 - 20:00. **EVENING PRESENTATION** CORCOVADO ROOMS 1 and 2  
(23) A BRIEF HISTORY OF THE TAPIRS  
**Dr. Matthew W. Colbert**  
Department of Geological Sciences, University of Texas, United States  
Member, IUCN/SSC Tapir Specialist Group  
Introduction by Heidi Frohring (United States) (19:30 - 19:35)
- 20:00 - 20:30. **VERBAL AUCTIONS** CORCOVADO ROOMS 1 and 2  
FUNDRAISING FOR THE GUANACASTE CONSERVATION AREA

## DAY 3. Nov. 5<sup>th</sup>, Monday

### MORNING

- 08:30 - 10:50. **PAPER SESSION 4** CORCOVADO ROOMS 1 and 2  
**VETERINARY ISSUES/DISEASES** Chair: Dr. Sonia Hernandez-Divers
- 08:30 - 08:40. SESSION INTRODUCTION
- 08:40 - 08:50. (24) Citogenética del Tapir de Selva *Tapirus terrestris* en Colombia  
JAVIER ADOLFO SARRIA-PEREA (Colombia)
- 08:50 - 09:00. (25) Chemical Restraint of wild *Tapirus terrestris* in Pontal do Paranapanema Region, São Paulo State, Brazil  
PAULO ROGERIO MANGINI (Brazil)
- 09:00 - 09:10. (26) Sanitary Evaluation of Wild Populations of *Tapirus terrestris* in Pontal do Paranapanema Region, São Paulo State, Brazil  
PAULO ROGERIO MANGINI (Brazil)
- 09:10 - 09:20. (27) Chemical Restraint of two wild *Tapirus pinchaque* in the Central Andes of Colombia: case report  
PAULO ROGERIO MANGINI (Brazil)
- 09:20 - 09:25. (28) Chemical Restraint of two Brazilian Tapirs (*Tapirus terrestris* Linnaeus, 1758) with romifidine, and antagonism by atipemazole  
JOSÉ RICARDO PACHALY (Brazil)
- 09:25 - 09:30. (29) Chemical Restraint of three Brazilian Tapirs (*Tapirus terrestris* Linnaeus, 1758) with romifidine, and antagonism by yohimbine  
JOSÉ RICARDO PACHALY (Brazil)
- 09:30 - 09:35. (30) Field trial on chemically restraining a Brazilian Tapir (*Tapirus terrestris* Linnaeus, 1758) with romifidine  
JOSÉ RICARDO PACHALY (Brazil)
- 09:35 - 09:40. (31) Chemical Restraint of an aggressive male Brazilian Tapir (*Tapirus terrestris* Linnaeus, 1758) with romifidine, and antagonism by yohimbine - Case report  
JOSÉ RICARDO PACHALY (Brazil)

- 09:40 - 09:50. (32) Identification of aerobic bacteria from internal organs of *Tapirus bairdii* from Miguel Alvarez del Toro Regional Zoo, Chiapas, Mexico  
IVÁN LIRA TORRES (Mexico)
- 09:50 - 10:00. (33) Capture myopathy in Baird's Tapir *Tapirus bairdii*: a case from Chiapas, Mexico  
IVÁN LIRA TORRES (Mexico)
- 10:00 - 10:10. (34) Identification of ecto and endoparasites in the Central American Tapir *Tapirus bairdii*, in Chiapas, Mexico  
IVÁN LIRA TORRES (Mexico)
- 10:10 - 10:20. (35) Capture and Immobilization of Free-Ranging Baird's tapirs in Corcovado National Park, Costa Rica  
SONIA M. HERNANDEZ-DIVERS (United States)
- 10:20 - 10:30. (36) Health Assessment of a Radiocollared Population of Free-Ranging tapirs in Corcovado National Park, Costa Rica  
SONIA M. HERNANDEZ-DIVERS (United States)
- 10:30 - 10:50. QUESTIONS
- 10:50 - 11:20. **COFFEE BREAK POSTER SESSION CORCOVADO ROOM 3**
- 11:20 - 12:20. **KEYNOTE SPEAKER CORCOVADO ROOMS 1 and 2**  
(37) AREA DE CONSERVACIÓN GUANACASTE, COSTA RICA  
**Dr. Daniel Janzen**  
University of Pennsylvania, United States  
Introduction by Dr. Sonia Hernandez-Divers (United States) (11:20 - 11:25)
- 12:20 - 14:00. **LUNCH**

## **AFTERNOON**

- 14:00 - 15:40. **PAPER SESSION 5 CORCOVADO ROOMS 1 and 2**  
**HUSBANDRY/EDUCATION** Co-Chairs: Heidi Frohring and Rick Barongi
- 14:00 - 14:10. SESSION INTRODUCTION
- 14:10 - 14:20. (38) Project Tapir: Designing a Plan to Reintroduce the Lowland Tapir (*Tapirus terrestris*) in the Reserves of the Universidad Nacional de Tucumán, Argentina  
JUAN PABLO JULIÁ (Argentina)
- 14:20 - 14:30. (39) Behavior of the Baird's Tapir in captivity in Chiapas, Mexico  
EPIGMENIO CRUZ ALDÁN (Mexico)
- 14:30 - 14:40. (40) Effects of Enclosure Design on Tapir Life History Traits  
LISA A. NORDSTROM (United States)
- 14:40 - 14:50. (41) Development of a Captive Malayan Tapir (*Tapirus Indicus*) at Woodland Park Zoological Gardens  
HEIDI FROHRING (United States)
- 14:50 - 15:00. (42) Covered Curiosities? Ways to Increase Natural Behavior and Public Education in Captive Tapirs  
STEFAN SEITZ (Germany)
- 15:00 - 15:10. (43) Management of Tapirs at the Los Angeles Zoo  
MICHAEL DEE (United States)
- 15:10 - 15:20. (44) Voluntary Medical Sampling of Tapirs at the Audubon Zoo  
KATHY TOPHAM (United States)
- 15:20 - 15:40. QUESTIONS
- 15:40 - 16:10. **COFFEE BREAK POSTER SESSION CORCOVADO ROOM 3**
- 16:10 - 17:40. **PAPER SESSION 6 CORCOVADO ROOMS 1 and 2**  
**TAPIR BIO-POLITICS** Chair: Rick Barongi
- 16:10 - 16:20. SESSION INTRODUCTION
- 16:20 - 16:30. (45) *Tapirus pinchaque* Population Management  
JAIME ANDRÉS SUAREZ MEJÍA (Colombia)

- 16:30 - 16:40. (46) Wilderness area connectivity and changes in tapir habitat availability in northern Mesoamerica  
ALFREDO D. CUARÓN (Mexico)
- 16:40 - 16:50. (47) Assessing the Effectiveness of Protected Areas for Tapir Conservation in Mesoamerica  
ALFREDO D. CUARÓN (Mexico)
- 16:50 - 17:00. (48)  
WILLIAM R. KONSTANT (United States)
- 17:00 - 17:10. (49)  
NICO VAN STRIEN (Indonesia)
- 17:10 - 17:20. (50) Social dynamics in conservation planning and implementation  
SUSIE ELLIS (United States)
- 17:20 - 17:40. QUESTIONS

## **EVENING**

- 19:00 - 19:45. **EVENING PRESENTATION** CORCOVADO ROOMS 1 and 2  
(51) IDEA WILD  
**Wally Van Sickle**  
President, Idea Wild, United States  
Introduction by E. Patrícia Medici (Brazil) (19:00 - 19:05)
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## **DAY 4. Nov. 6<sup>th</sup>, Tuesday**

**CONFERENCE BREAK** LA MARINA ZOO and CARARA BIOLOGICAL RESERVE

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## **DAY 5. Nov. 7<sup>th</sup>, Wednesday**

### **MORNING**

- 08:00 - 09:20. **WORKSHOP 1** CORCOVADO ROOMS 1 and 2  
(52) MARKETING AND MEDIA AFFAIRS  
**Diane Ledder**  
Disney, United States  
**Patty Peters**  
Director of Marketing, Columbus Zoo, United States  
Introduction by Lewis Greene (United States) (08:00 - 08:05)
- 09:20 - 10:40. **WORKSHOP 2** CORCOVADO ROOMS 1 and 2  
(53) TAPIR ACTION PLAN: REVIEW, EXPAND AND PRIORITIZE  
**E. Patrícia Medici**  
Conservation Biologist, IPÊ - Institute for Ecological Research, Brazil  
Chair, IUCN/SSC Tapir Specialist Group
- 10:40 - 11:00. **COFFEE BREAK** CORCOVADO ROOM 3
- 11:00 - 12:30. **WORKSHOP 3** CORCOVADO ROOMS 1 and 2  
(54) IUCN/SSC TAPIR SPECIALIST GROUP: FUTURE PERSPECTIVES  
**E. Patrícia Medici**  
Conservation Biologist, IPÊ - Institute for Ecological Research, Brazil  
Chair, IUCN/SSC Tapir Specialist Group
- 11:00 - 11:10. INTRODUCTION
- 11:10 - 11:30. (54a) Notes about the IUCN Red List Categories and Criteria Process  
ANA VIRGINIA MATA FERRETO (Costa Rica)
- 11:30 - 12:30. **(54b) DISCUSSIONS - IUCN/SSC TAPIR SPECIALIST GROUP**  
**E. PATRÍCIA MEDICI (Brazil)**

12:30 - 14:00. **LUNCH**

## **AFTERNOON**

14:00 - 15:30. **WORKSHOP 4** CORCOVADO ROOMS 1 and 2  
(55) **FUND RAISING**  
**Wally Van Sickle**  
President, Idea Wild, United States

15:30 - 16:00. **COFFEE BREAK** CORCOVADO ROOM 3

16:00 - 18:00. **PLENARY SESSION** **PLANS FOR ACTION** CORCOVADO ROOMS 1 and 2

## **EVENING**

19:00 - 20:00. **KEYNOTE SPEAKER** CORCOVADO ROOMS 1 and 2  
(56) **Dr. William R. Konstant**  
Special Projects Director, Conservation International, United States  
Introduction by Rick Barongi (United States) (19:00 - 19:05)

20:00 - 21:00. **FINAL BANQUET DINNER** GONDOLA ROOM

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## **POSTERS**

1. (57) Conservation Program of the Woolly Tapir (*Tapirus pinchaque*) - Roulin 1829 - in the Department of Tolima - Colombia  
FRANZ KASTON FLÓREZ (Colombia)
  2. (58) Breeding & Husbandry of the Malayan Tapir (*Tapirus indicus*) at Mountain View Farms Conservation and Breeding Center  
OSCAR LONG (Canada)
  3. (59) Comparative Behavior and Public Perception of Tapirs (*Tapirus* sp.) in Zoos  
STEFAN SEITZ (Germany)
  4. (60) Development of Molecular Genetic Markers for the Assessment of Population Genetic Variability in Baird's tapirs, *Tapirus bairdii*, and their Potential for Broader Use in the Investigation of Wild Tapir Populations  
JAMES NORTON (United States)
  5. (61) Note on Malayan Tapir in West Sumatra, Indonesia  
WILSON NOVARINO (Indonesia)
  6. (62) Hunting and Current habitat of the tapir in Volcano Tenorio National Park and Miravalles Buffer Zone, Arenal, Costa Rica  
FABRICIO CARBONELL (Costa Rica)
  7. (63) Animal Management Center: a conservation example of the *Tapirus terrestris* in the Atlantic Rainforest of Southern Bahia, Brazil  
TATIANA BICHARA DANTAS (Brazil)
  9. (64) Lowland tapir (*Tapirus terrestris*) Ranging Behavior, Habitat Use and Diet in Santa Cruz, Bolivia  
JOSÉ CARLOS HERRERA (Bolivia)
  10. (65) Wild Fauna Electronic Register System and Tapir's Sounds Analysis  
DELIO MENDOZA HERNÁNDEZ (Colombia)
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# ABSTRACTS - RESÚMENES

## (01) KEYNOTE SPEAKER: HUNTING AND THE DECLINE OF TAPIR POPULATIONS

**Richard E. Bodmer**

The Durrell Institute of Conservation and Ecology, Eliot College, University of Kent, England  
Canterbury, Kent, CT2 7NS UK; E-mail: R.Bodmer@ukc.ac.uk

Tapir populations decline rapidly when hunted. This paper will examine the biological and socio-economic factors that make tapirs so susceptible to overhunting. Tapirs live in tropical areas that are usually inhabited by poor rural people. These people hunt tapir primarily for food, either as subsistence or for sale in local meat markets. Tapirs are often the largest native terrestrial mammals in the region and they are usually regarded as an important source of meat. Indeed, if hunters encounter tapir in forests there is little doubt they will shot. While the size of tapir may have aided them in escaping some natural predators, it is this large size that makes them so preferred by rural subsistence hunters. Whilst other mammals can withstand a limited amount of hunting tapirs are impacted rapidly by hunting. The slow reproductive rates, long generation times, and delay in first reproduction are life history characteristics that make the tapir susceptible to overhunting. Some recommendations that need to be made regarding the hunting of tapir are 1) tapir should not be considered as a suitable subsistence meat, 2) local community projects should look for ways to discourage local hunters from shooting tapir, and 3) source populations should be linked to protected area networks to help rebuild tapir populations. Unfortunately, in areas where habitat destruction is fragmenting forests, tapirs become even more vulnerable to overhunting in the remaining forest patches.

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## (02) USE OF GPS COLLARS TO STUDY MOUNTAIN TAPIRS (*Tapirus pinchaque*) IN THE CENTRAL ANDES OF COLOMBIA

**Diego Lizcano<sup>1</sup>, Jaime Cavalier<sup>2</sup> & Paulo Rogerio Mangini<sup>3</sup>**

<sup>1</sup> Laboratorio de Ecología Vegetal, Depto. de Ciencias Biológicas, Universidad de los Andes  
A. A. 53804, Bogota, Colombia; E-mail: dlizcano@eudoramail.com

<sup>2</sup> 2828 Connecticut Av. NW, Apt 608, Washington, D.C. 20008, USA

<sup>3</sup> Associated Researcher, IPÉ - Institute for Ecological Research, Brazil; Scientific Coordinator, VIDA LIVRE - Wildlife Medicine; Assistant Professor, Wildlife Medicine and Captive Breeding Program, Veterinary Course, Pontifical Catholic University of Paraná; E-mail: pmangini@uol.com.br

This research evaluated the performance of GPS collars to study Mountain Tapirs. The GPS collars (GPS\_1000. Lotek Engineering Inc. Ontario Canada) were tested at Nevados National Park and Ucumari Regional Park, a forest region with a complex topography. These kinds of collars weigh less than one percent of animal weight (+/- 200 Kg). The collars were programmed to fix tree locations at day and one location per hour during a day each week. Additionally the collars have activity and temperature sensors and can be followed by traditional telemetry. Two tapirs, male and female, were captured and sedated in July 2000. After six months on the animals, an automatic release mechanism was activated. The collars were founded by traditional telemetry in February-March 2001. In spite of the complex topography, the clouded sky and the forest cover, the collars fixed the 28 % (343 locations) of total programmed locations (1236) in six months. More than 50% of fixed locations showed a DOP (Dilution of Position Index) minor to 2.5. The collared animals showed more activity between 4:00-8:00 hours and between 16:00-20:00 hours. We founded a negative correlation between activity and air temperature. In the six months the home range of the tapirs was between 1.4 and 2.2 Km<sup>2</sup>.

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## (03) THE USE OF HUNTING DOGS TO CAPTURE TWO *Tapirus pinchaque* IN THE CENTRAL ANDES OF COLOMBIA

**Diego Lizcano<sup>1</sup>, Paulo Rogerio Mangini<sup>2</sup>, Alonso Quevedo<sup>3</sup> & Jaime Cavalier<sup>4</sup>**

<sup>1</sup> Laboratorio de Ecología Vegetal, Depto. de Ciencias Biológicas, Universidad de los Andes  
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Two adult *Tapirus pinchaque* were captured to accomplishing studies of radio telemetry. Initially, the capture was attempted with box traps (22 nights) without success. Waiting for the animals in natural saltlicks, with fruit bait (112 hours) also did not obtain success. Pitfall method was not used due to the craggy and rocky characteristic of the area. Using three hunting dogs, success was obtained in two of three capture attempts. A male about 180 kg and a female about 250 kg were captured. This method involves hunters searching the forest for tapir recent tracks, and afterwards the dogs are driven to the local and liberated, following the tracks and making the tapir run. In both captures the persecution reached about 10 minutes. All the capture team follows the barking sounds that indicate when the tapir interrupts the race, defending itself. When the persecuted animal stops, it is shoot with an anesthetic dart. Due to the craggy nature of the location, to avoid accidents during the animal's recovery these were restricted into a small wooden corral. Patients' total recovery lasted about four hours after the anesthesia. Despite the stressful situation and inherent risks of the method, no accidents occurred during the captures. The only consequences observed were superficial cutaneous wounds. After the captures the animals were tracked and did not demonstrate any sequels due to the method.

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#### (04) RESULTS OF A FIVE-YEAR TELEMETRY STUDY OF BAIRD'S TAPIR IN COSTA RICA

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Twenty-two Baird's tapirs were monitored for various lengths of time via radio-telemetry from June 1995 to December 2000, in Corcovado National Park, Costa Rica. Average annual home range size was 107.4 ha (n=26;range=59-194). Average wet- and dry-season home range sizes were 82.8 ha and 92.1 ha respectively. Extensive home range overlap was seen. Four tapirs (all females) dispersed an average of 18 km from their original home ranges. Eight offspring (5 male, 2 female, 1 unknown) were born to 5 females. Three tapir deaths were recorded during the study (2 male, 1 female).

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#### (05) FORAGING BEHAVIOR AND DIET OF A FEMALE BAIRD'S TAPIR IN CORCOVADO NATIONAL PARK, COSTA RICA

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A female Baird's tapir (*Tapirus bairdii*) was observed for a total of 286 hours from June 1995 to April 1996, in Corcovado National Park, Costa Rica. The tapir consumed 126 different plant species. Percentages of bites taken of each food item were 67.0% leaves, 18.6% fruits, 11.7% stems, 2.1% bark and 0.1% flowers. Three species accounted for 40% of the tapir's diet for the entire study. The study-long mean for number of bites taken per hour was 298. Mean dry weight per bite consumed over a three-month period was 3.3 g. The tapir consumed an average of 15.53 kilos (dry wt) of vegetation per day. The tapir spent 82.7% of her active time feeding, 3.4% in social interactions, and 13.9% in other activities.

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#### (06) HOME RANGE CHARACTERISTICS AND HABITAT USE OF THE BAIRD'S TAPIR (*Tapirus bairdii*) IN CORCOVADO NATIONAL PARK, COSTA RICA

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Few studies have addressed the spatial ecology or habitat preferences of tapirs in a detailed manner, yet such knowledge is essential for understanding the tapir's ecological role in tropical forests and for the effective management of tapir populations. We investigated the spatial ecology of Baird's tapir in Corcovado National Park, Costa Rica. Using radio telemetry, we obtained over 1400 locations of fifteen (10 M, 5 F) tapirs during the wet season (June-September) of 1999 and the dry season (February-May) of 2000. Home ranges for individual tapirs were estimated using a fixed kernel estimator. Average home range size was approximately 125 ha, and home range overlap was extensive. Many animals' home ranges were

characterized by multiple core areas associated with centers of diurnal (near a major river) and nocturnal (secondary forest stands) activity. In general, seasonal changes in home ranges were minor. We also created a geographic information system of relevant landscape features in the study area, including vegetation type, topography, and proximity to major rivers and permanent streams. We overlaid the pooled radiolocations and an equal number of randomly generated points on this map and classified all points according to each habitat variable. The tapir locations were more likely to be found in secondary forests, on flat or gently sloping terrain, and near permanent water sources than random points. We developed a habitat selection model using logistic regression and created a map layer depicting the probability of tapir occurrence within our study area. Our results identify variables that should be considered when making management decisions about habitat protection or manipulation and highlight the ability of tapirs to utilize regenerating forest stands when they are given adequate protection.

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## (07) FEEDING HABITS AND IMPACT OF HUMAN ACTIVITY ON BAIRD'S TAPIR IN LA SEPULTURA BIOSPHERE RESERVE, CHIAPAS, MÉXICO

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Baird's tapir (*Tapirus bairdii*) probably has an important role in tropical forests as a browser, seed disperser and seed predator. However, these assumptions have not been confirmed yet in the field. Our objectives were: (1) to determine Baird's tapir feeding habits in La Sepultura Biosphere Reserve (LSBR); (2) to assess its effectiveness as a seed disperser; and (3) to estimate the impact of human activity on tapirs at LSBR. From February through December 1999, we counted tapirs and their signs (tracks and feces) along 369 km of line transects in the northwestern sector of LSBR (192,734 hectares). We collected tapir feces and plants consumed by this ungulate. We then performed germination tests with seeds of seven plant species taken from both tapir feces and fruit collected in the field. Tapir diet consisted of 98.6% leaves and stems, and only 1.4% fruit (n=278). We collected 56 plant genera consumed by tapirs, including four new records for the species. For three plant species, we found higher germination percentages in seeds taken from feces compared to seeds directly taken from fruit. The analysis of 100 interviews with residents of the study area suggested that current hunting pressure on tapirs is very low, due largely to its restricted abundance and distribution. We did not find association between tapir sign frequency and the proportion of tapirs hunted in different habitat types. However, we detected a positive correlation between sign abundance and the number of tapirs observed by local people in different habitat types. We consider that promotion of environmental consciousness and alternative productive projects in local communities are needed to allow the survival of tapirs at LSBR.

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## (08) BIOLOGY, ECOLOGY, AND CONSERVATION OF THE BAIRD'S TAPIR (*Tapirus bairdii*) IN CHIAPAS, MÉXICO

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Proposal seeks funding for capture, restraint, and monitoring equipment needed for a Mexican zoo-based field study on the conservation status of Baird's tapir populations in La Sepultura and El Triunfo Biosphere Reserve of Chiapas, México. During a thirty-six month period, researchers from the Zoológico Regional Miguel Álvarez del Toro (ZOOMAT) will capture, radio collar, and monitor up to nine animals living in and around La Sepultura and El Triunfo reserves. Important data such as daily activity patterns, habitat use, and home range size will be gathered using radio telemetry, visual tracking, and indirect observation methodologies. Dietary habits and feeding behavior will be evaluated by gathering and identifying local fruits and plant species consumed by study animals. Animal captures will provide a unique opportunity to collect a wide range of medical data including blood serum samples, skin biopsies, and external parasites. Overall

health of tapir populations in the reserves will be evaluated using these data. Collected medical data will also help determine whether illnesses such as Venezuelan equine encephalitis, documented in domestic farm animals in the surrounding area, threaten the health of tapir populations in La Sepultura and El Triunfo Biosphere Reserve. Information gathered during the field study will aid in the development of future management plans for Mexico's remaining Baird's tapir populations as well as improved captive management protocols for animals currently held in zoo collections throughout México.

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#### (09) ECOLOGY AND CONSERVATION OF BAIRD'S TAPIR IN THE LACANDON FOREST, MEXICO

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We estimated Baird's tapir distribution, abundance, population structure, and home range in Montes Azules Biosphere Reserve, Chiapas, Mexico. We counted tapirs and their tracks along 1908 km of transects in slightly and persistently hunted sites between 1998 and 2000. We interviewed 232 local hunters and discussed our results with them. We observed 17 tapirs and 412 tracks (80% in slightly hunted areas). We estimated an encounter rate and density of 0.89-tapirs/100 km, and  $0.22 \pm 0.12$  tapirs/km<sup>2</sup>. The two-month home range of an adult female was 0.67 km<sup>2</sup>. Tapirs didn't showed habitat preferences, although we observed more tracks far from human settlements and in sites with high fruit productivity and abundant water bodies. Observed sex ratio was 8 females:5 males, of which 85% were adults, 11.8% juveniles, and 5.9% young. Feces contained 98% leaves and stems, and 2% fruit. Both production and harvest models indicated unsustainable tapir hunting at regional and local levels. We estimated the tapir population status at only 0.21K in persistently hunted areas. To promote tapir conservation, we recommend to: (1) protect remaining tapir habitat; (2) encourage self-regulation of hunting by local communities; (3) search economic alternatives for local people; (4) establish regional environmental education and research programs around MABR.

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#### (10) HABITAT USE PATTERNS OF BAIRD'S TAPIR (*Tapirus bairdii*) IN TWO LOCALITIES IN THE LACANDONA RAINFOREST, CHIAPAS

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In this study, I evaluated the habitat use of Baird's tapir (*Tapirus bairdii*) in the riverbed of the Lacantún River in the State of Chiapas, Mexico. The pretension of this work was also to identify the characteristics of the habitat that are important in the habitat selection process of this ungulate. In one hundred sample sites, I characterized the vegetation structure by means of quantifying twelve variables of the habitat. I estimated the number of visits of tapirs at these sites using indirect evidence. The results show that this animal has a preference for seasonally flooded areas and secondary forest rich in woody vines. The factors found to be important in the habitat selection process were the availability of water, the density of woody vines and fruit productivity. This information is relevant in the planning of conservation actions, such as habitat management and betterment programs, that tend to connect sites used by existing tapir populations. These actions will benefit a good part of the biota of the tropical ecosystems in which Baird's tapir lives, since its spatial requirements and high sensitivity to human disturbance makes this species a good indicator of the general health of the ecosystem.

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#### (11) POPULATION DENSITY AND ECOLOGY OF MALAYAN TAPIRS IN LOWLAND FOREST, SUMATRA, INDONESIA

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The population density and ecology of Malayan tapirs (*Tapirus indicus*) was investigated in Way Kambas National Park, a lowland forest in southeast Sumatra, Indonesia. The tapir's population density was estimated from a photographic database of 13,622 photographs, of which 115 were tapirs. The photographs were collected from October 1995 to December 1998 as part of a field study of wild Sumatran tigers. Comparing a combination of distinctive scars, saddle shapes, ear tips, gender and time and location of the photograph, we identified thirteen individual tapirs. From these data we estimate population density and examine tapir distribution within the study area and the park. Tapirs are exclusively solitary, and are almost strictly nocturnal, with a unimodal activity pattern that peaks at 19:00 hours, precisely the time of night when their only possible predator, the Sumatran tiger, is least active. Analysis of tiger prey preferences suggests tigers do not select tapirs. A major conclusion of this study is that Way Kambas National Park harbors a significant population of wild tapirs, and should be considered a high priority area for Malayan tapir conservation in Sumatra.

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## (12) DISTRIBUTION OF TAPIRS (*Tapirus indicus*) AND COMPARISON WITH SELECTED HERBIVORES IN THREE DIFFERENT SITES

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The study attempted to determine the distribution and relative abundance of Tapirs (*Tapirus indicus*) and compare it with selected herbivores. It is suggested that the distribution pattern is related to the food competition. This study was conducted at three locations that are Cameron Highlands, Lepar Forest Reserve and Taman Negara National Park from February 1999 to August 2001. The study sites covered four different habitats ranging from the lowland (<300m in altitude), hill dipterocarp (301-700m), upper-dipterocarp (701-1200m) to montane oak laurel (>1200m). Preliminary analysis of the distribution and relative abundance of Tapirs and selected herbivores based on camera-trapping data was done. The preliminary analysis suggests there is food competition between Tapir and other herbivores.

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## (13) EVALUATION OF DIFFERENT METHODOLOGIES USED TO CAPTURE WILD LOWLAND TAPIRS (*Tapirus terrestris*) IN PONTAL DO PARANAPANEMA REGION, SÃO PAULO STATE, BRAZIL

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This paper reports results of different methodologies used to capture wild lowland tapirs. Since the beginning of our tapir study in the Atlantic Forest of São Paulo, 20 tapirs (9 males and 11 females) were caught. The most used methodology was the pitfall, with 14 successful captures (38 pitfalls, 95 nights, 7 capture rounds 1996-2001). Dart shooting, both from the ground and from high platforms (bait stations), was used in special circumstances. Shooting from the ground was mostly used to recapture radio-collared tapirs (4 attempts, 2 successful). Dart shooting success was conditioned by tapirs' degree of acceptance to human presence. Initial attempts (120 nights) using platforms (5-6 m high) deep into the forest failed due to equipment failure or the animals felt human presence and did not get close. At the park's headquarters area, where tapirs are relatively habituated to human presence, dart shooting succeeded (2 captures, 10 nights). Box trap success was also conditioned by human presence. When box traps were used deep into the forest (120 nights) no tapirs were caught, but at park's headquarters, 2 tapirs were caught (12 nights). Two other methodologies did not succeed, a corral (60 nights) and using flashlights on the roads (14 nights).

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## (14) CONSERVATION BIOLOGY OF LOWLAND TAPIRS (*Tapirus terrestris*) AND THEIR POTENTIAL AS 'LANDSCAPE DETECTIVES' AT THE PONTAL DO PARANAPANEMA REGION, SÃO PAULO STATE, BRAZIL

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This paper presents preliminary results of a long term study on the aspects of the conservation of lowland tapirs (*Tapirus terrestris*) in Pontal do Paranapanema Region, Sao Paulo State, Brazil, which includes Morro do Diabo State Park (35,000ha), one of the last remnants of significant size of this ecosystem, and the surrounding forest fragments. The main objectives of the study are to describe home range size, overlap between neighboring individuals and territorial behavior of this species; to estimate the population size of tapirs in Morro do Diabo and neighboring forest fragments; to investigate their potential as 'landscape detectives' showing us the most used dispersal routes and pathways in the landscape, and therefore the potential areas to be conserved and restored as wildlife corridors; to assess the genetic and health status of these fragmented and, at some extent, isolated populations. Fifteen individuals have been trapped and radio-collared since 1996 and their movements continuously monitored and mapped throughout the landscape. Emphasizing one of the main conservationist justifications of this project, we argue that we need the park together with the remaining forest fragments to maintain a genetically and demographically viable population of these ungulates. We intend to increase their habitat by creating corridors and buffer zones around the natural habitats.

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#### (15) ECOLOGY AND CONSERVATION OF TAPIRS (*Tapirus terrestris*) IN EMAS NATIONAL PARK AND SURROUNDING FARMLAND, CENTRAL BRAZIL

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The Cerrado is Brazil's second most extensive biome, covering two million square kilometers. Emas National Park (ENP), with its 132.000 ha located in central Brazil, is one of the country's largest Cerrado reserves. However its protected fauna have been suffering with the pressure of insularization in consequence of intense farming activities in its surroundings. ENP is widely known for protecting populations of large mammals such as tapirs and peccaries. Tapirs apparently play important roles in the Cerrado ecology, as seed dispersers and by representing an important prey for the jaguar. This research initiated in February 2000 was designed to raise information on the ecology of tapirs in a continuous preserved Cerrado (ENP) as well as in fragmented Cerrado within farmland. This information will be used in the conservation and management of tapirs in the Park as well as in private Cerrado areas. Since April 2000 fifteen tapirs (8 males and 7 females) have been captured and radio-collared in and outside ENP. Data on their sociality, reproduction, home range, diet and habitat use are being collected. Blood and serum samples are being stored for future genetic and epidemiological studies.

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#### (16) HOW LONG DOES A TAPIR TRACK LAST? IMPLICATIONS FOR POPULATION ASSESSMENTS

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Tapir tracks are conspicuous and are increasingly been used to assess tapir populations. In such surveys there are several factors that are rarely considered and that may affect population assessments. Critical among these factors are the variability in track establishment and duration on different soil types and at different times of the year, as well as the amount of vegetation cover and leaf-litter fall in the areas surveyed. We used an experimental approach to assess the probability of establishment and the duration of tapir (*Tapirus bairdii*) tracks in two different types of soils, and in four times of the year with different amounts of rainfall and soil humidity. We also considered vegetation cover and the amount of litter falling in the sites. In total we evaluated the fate of 800 tapir tracks. Track establishment and duration varied considerably with the factors considered. Our results clearly indicate that studies that do not consider the variability in track

probability of establishment and track duration according to soil type and time of the year may be seriously erring in their conclusions. If surveys take place in sites with variable environmental characteristics and at different seasons, adjustment factors may be necessary in order to make meaningful comparisons.

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## (17) GENETIC AND DEMOGRAPHIC STATUS OF CAPTIVE TAPIRS AND THE IMPLICATIONS FOR MANAGEMENT AND CONSERVATION

### **Brandie Smith**

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This presentation will use data from international tapir studbooks\* to examine the genetic and demographic health of captive populations of *Tapirus bairdii*, *T. indicus*, *T. pinchaque*, and *T. terrestris*. Projections will be made to assess future viability, the need for imports, and the potential for reintroduction. Recommendations will be made on how population management techniques can be used to benefit captive populations and allow them to have the greatest relevance to conservation. \* When international studbooks are not available, North American studbooks will be used.

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## (18) CONSERVATION OF MOUNTAIN TAPIR (*Tapirus pinchaque*) IN COLOMBIA

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Currently there are mountain tapir's populations in the Central and Eastern Cordilleras of Andes region of Colombia. The human population growth trends in Colombia are increasing the pressure on the mountain tapir's habitats. The areas occupied by the current tapir's population represent the 19 % of the past distribution. Actually these areas are facing many problems, mainly by the deforestation caused by illegally crops (like coca and opium) at Central Cordillera, Cattle ranching at all tapir distribution range and hunting. The national parks system of Colombia has 21 parks in the Andes region but only seven have tapirs (Cordillera de los Picachos, Cueva de los Guacharos, Las Hermosas, Los Nevados, Nevado del Huila, Purace, and Sumapaz). These national parks are protecting only the 13 % of the current tapir's habitat and other reserves are too small (< 500 ha) to maintain tapir's populations. Is urgent to establish corridors between isolated populations, design restoration programs where the habitat was degraded by deforestation, translocation of animals from small patches to a more big forest patch and implement the national program to the conservation of the mountain tapir planned by the Colombian environment ministry office to secure the survival of the species in the next years.

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## (19) HISTORICAL FRAGMENTATION OF THE CENTRAL AMERICAN TAPIR (*Tapirus bairdii*) HABITAT IN THE LACANDONA RAINFOREST, CHIAPAS, MEXICO, AND THEIR REPERCUSSION FOR THE PERMANENCY OF THE SPECIES IN THE REGION: A PROJECTION IN THE MEDIUM TERM

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The Lacandona Rainforest is located to the east of the state of Chiapas and plays a very important role in the ecological and climatic balance of North America, at the same time that it includes a great biological, cultural, ethnic and archaeological wealth; simply in terms of biodiversity of vertebrates, the Lacandona Rainforest harbors 821 species. The advance of the agricultural and cattle frontier has determined the quick decrease of the Baird's tapir habitat; presently work shows the correlation among the deterioration of the quality of the species habitat in the Lacandona Rainforest and its relative abundances, with a projection to 15 years. To develop the model, we elaborate Markovian Matrixes, considering the deterioration of the preferred habitats by the tapir. Under the current conditions, the densities of the species are of approximately 0.33 ind/km<sup>2</sup> and the surface embraced by the Lacandona Rainforest are of 13,000 km<sup>2</sup>, however if the deforestation rate continues like in the last years, in the medium term the habitat will decrease dramatically according with the mathematical model and the registered tendencies. More efficient programs of surveillance are required

regarding the forest uses, besides fomenting productive alternatives different to the agricultural, cattle and timber; otherwise the density of the Baird's tapir will register an irrecoverable descent during next years.

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## (20) THE GENUS *Tapirus* IN VENEZUELA: DISTRIBUTION AND SUGGESTIONS FOR ITS CONSERVATION

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*Tapirus terrestris* is the only species of the genus *Tapirus* Brunnich, 1771, found in Venezuela. We did a distribution map based on an extensive literature review, data from collections and interviews. The degree of reliability for each source was qualitatively classified. A cartographic analysis shows that: (i) *T. terrestris* is widely distributed in the country, with notorious absences in arid, high Andean and insular areas; (ii) the greatest number of records are south of the Orinoco river, associated to rain forests and savannahs; (iii) the few records North of the Orinoco are associated mainly to montane forests (Perijá, Mérida, Coastal and Oriental Mountain ranges); (iv) lack of records on the Maracaibo Basin and the Llanos (flatlands). Most records correspond lower than 500 m elevations, with very few records over 2000 m elevations. The low number of records north of the Orinoco can be related to habitat loss. We suggest for tapirs conservation: determine taxonomic position of *T. t. colombianus* and verify its presence in the country; promote research projects in areas of special interest (i.e., Coastal Mountain range); evaluate the system of protected areas based on tapir and other mammal distribution patterns; implement environmental education programs to show the status and conservation needs of tapirs; implement breeding programs to study biology and management issues about the species to strengthen and restore populations affected by human activities.

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## (21) TRANSLOCATION EXPERIENCE OF TAPIRS (*Tapirus terrestris*) IN HENRI PITTIER NATIONAL PARK

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This paper reports the experience of the translocation of 4 tapirs to the Henri Pittier National Park. Three females and one male were translocated due to the fact that the animals were in danger to be hunted, being in perturbed area. A protocol was elaborated in order to detect, capture, immobilization, be moved and reubicate the animals at the National Park. An interdisciplinary group of people especially equipped, with a previous studies of the area, which included: animal immobilization plan, selected liberation area, morphometric evaluation, laboratory and clinical personal were used during the procedure. The protocol of use of Ketamine, Xilazine and combination of Tiletamine-Zolazepam to immobilize the species to be translocated allowed to acquire experience in the sedation and to manage the animals in the procedure without stress. The hematological values found in each individual are presented. The coprologic examination allowed the detection of parasite population of the species. The presence of bacteria in nasal, pharyngeal and fecal samples is reported. The translocation is an alternative method to preserve survival of species in extinction. It is a good strategy for ecological recovering and allows expanding the biological knowledge of these animals.

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## (22) STATUS OF TAPIRS IN VENEZUELAN ZOOS

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The Zoological parks are playing an important role in the conservation ex-situ of wildlife species through the accomplishment of their main objectives: Education, Conservation, Research and Recreation. In order to know the status of the tapir populations in captivity, we analyzed the data provided, in the last eight years, by eight institutions related with the handling of the specie. The information was obtained through different sources: phone interviews, inventories and the scarce historical records contributed by the institutions. The

data collected relating results to the number of species indicate that *Tapirus terrestris* is the only species present in the collections, with a number of 39 specimens (100%); about 15,4% of this total is from unknown origin, 71,8% are captive born and the 12,8% remaining come from the wild. The mortality is divided in: 5,1% for natural causes, 20,5% not natural causes and 7,7% doesn't have any information. Regrettably among the Venezuelans there used to be a not serious politics of acquisition and disposition of animals and just few of them develop a Collection Plan carefully; Added to this, the scarce registrations make difficult an effective handling in captivity of the species, however the reproduction in captivity has been positive and further extraction of specimen from the wild to initiate breeding programs does not seems a must. Actually is a needed the design of an appropriate genetic management that allows the setting in March of a breeding program in captivity accompanied by a good registration system. It is necessary an improvement in the sanitary management to decrease the causes of death, as well as training for the staff. This way we will be contributing with the conservation of the specie.

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## (23) EVENING PRESENTATION: A BRIEF HISTORY OF THE TAPIRS

### **Matthew W. Colbert**

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Extant tapirs are often considered 'living fossils' because their morphology seems primitive compared to their closest relatives, the rhinoceroses, as well as to their more distant cousins, the horses. However, several derived features readily distinguish tapirs from other perissodactyls. Primary among these is their prehensile proboscis, a feature which arose after their split from the rhinoceroses, and which is reflected in the unusual architecture of their skull. Other features, such as the transverse shearing blades (lophs) on their teeth, and their three-toed hind foot, are thought to have evolved prior to their divergence from the rhinoceroses. A hypothesis of phylogenetic relationships for the living and fossil tapirs, using both molecular and morphological data, is used to sort out the relative times of appearance of characters, and to develop scenarios for the evolution of the tapir's unique body plan. This phylogenetic hypothesis also suggests changes in 'traditional' taxonomic nomenclature, and provides a framework for interpreting the unusual disjunct biogeographic distribution of the living tapirs.

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## (24) CITOGÉNÉTICA DEL TAPIR DE SELVA *TAPIRUS TERRESTRIS* EN COLOMBIA

### **Javier Adolfo Sarria-Perea<sup>1</sup>**, Ligia Mercedes Jiménez-Robayo<sup>2</sup> & Carlos Arturo Sánchez-Isaza<sup>2</sup>

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The hole blood technique for lymphocyte culture by Moorehead *et al.* (1960) modified and the GTG (Howell & Black 1978), RBG (Pai & Thomas 1980) and CBG (Sumner 1972) banding techniques were employed for this purpose. Results revealed a  $2n=80$ , as reported by Huck & Kumamoto (2000), and a  $NF=96$  which differs notoriously from the  $NF=84$  for the same species, and is very similar to the  $NF=98$  for the *Tapirus bairdii* reported by the same authors. One autosomic pair was metacentric, six were submetacentrics and 32 were acrocentrics; the X was metacentric and the Y was acrocentric. These results seem to be an evidence for complex population structure in *T. terrestris* with different chromosome complements; which justifies more cytogenetic studies of the species. This is the first cytogenetic study of *Tapirus terrestris* in Colombia.

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## (25) CHEMICAL RESTRAINT OF WILD *Tapirus terrestris* IN PONTAL DO PARANAPANEMA REGION, SÃO PAULO STATE, BRAZIL

### **Paulo Rogério Mangini<sup>1</sup>**, E. Patrícia Medici<sup>2</sup> & George O. Velastin<sup>3</sup>

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This paper reports the different protocols used in the chemical restraint of 16 wild *Tapirus terrestris*. Different capture methodologies required different anesthetic protocols. Six distinct protocols with different anesthetic combinations were used, using one or two darts. All the protocols involved associations of dissociative anesthetics, alfa-2 agonistic agents, benzodiazepine drugs, and atropine. Doses were calculated using

interspecific allometric scaling. Two-darts protocols (pitfalls and box traps) were applied 10 times, and were composed by a first dart containing medetomidine (0,01-0,008 mg/kg), romifidine (0,11-0,09 mg/kg) or xilazine (0,56-0,42 mg/kg) plus atropine (0,04 mg/kg); and a second dart, administered ten minutes later, containing tiletamine + zolazepam (4,11-5,6 mg/kg). One-dart protocols (dart-shooting - captures and recaptures) were applied 6 times, and were composed by ketamine (0,62-0,41 mg/kg), atropine (0,025-0,04 mg/kg) and tiletamina+zolazepam (1,25 a 0,83 mg/kg) plus medetomidine (0,006-0,004 mg/kg), detomidine (0,06-0,04 mg/kg), or romifidine (0,05-0,03 mg/kg). The average induction time for one-dart protocols was 5 minutes and supplementary doses were administered when necessary. All protocols produced adequate chemical restraint for the animals' manipulation, with few undesirable side effects. Medetomidine was the most used drug in two-darts protocol, producing the best results in terms of muscular relaxation and more stable cardio pulmonary parameters.

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## (26) SANITARY EVALUATION OF WILD POPULATIONS OF *Tapirus terrestris* IN PONTAL DO PARANAPANEMA REGION, SÃO PAULO STATE, BRAZIL

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This paper demonstrates the perspectives of disease research in wild populations of *Tapirus terrestris*. Collection of biological material such as blood, feces and ectoparasites has been contributing to an evaluation of the species sanitary and ecological conditions. The relation between hosts and parasites may influence the dynamics of tapir populations. At Pontal do Paranapanema region, proximity between forest fragments and domestic cattle areas, seems to be a key factor for these complex relations. Wild tapirs often share the same pasture areas with domestic equines, suids, and bovines. Ectoparasites like *Amblyoma cajannenses* were observed in tapirs. This parasite is common to domestic and wild animals in the Pontal region and may be responsible for transmission of *Rickettsia rickettsii*. Tapirs also show positive antibodies titles against Leptospirosis, Equine Encephalomyelitis (WEE), Bovine Herpesvirus I and Blue Tongue. This indicates that proximity between domestic animal and wildlife may represent an important way to spread infectious agents from outside into the forests. Nowadays, the antibodies research embraces others species such as *Tayassu pecari* and *T. tajacu*. Morbidity and mortality of these agents, and the complexity of interrelations between parasites and hosts, was not determined. However, it is possible to speculate that diseases contribute to the mortality of wild tapir populations and others ungulate in the region.

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## (27) CHEMICAL RESTRAINT OF TWO WILD *Tapirus pinchaque* IN THE CENTRAL ANDES OF COLOMBIA: CASE REPORT

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This abstract reports the chemical restraint of two wild *Tapirus pinchaque* (Mountain Tapir) caught in Los Nevados National Park, Colombia. Animals were captured using trained dogs. The contention goal was a satisfactory anesthetic state for installation of radio collars, ear tagging, corporal measurements and collection of blood samples and ectoparasites. A solution of 15 mg of Detomidine, 100 mg of Ketamine, 500 mg of Tiletamine/Zolazepam and 5 mg of Atropine, was elaborated in a single mixture inside one anesthetic dart. Two adult tapirs were captured, one male (estimated weight 180 kg) and one female (250 kg). Immobilization was satisfactory for 40 minutes in the male and 45 minutes in the female, after induction time of about 5 to 10 minutes in both tapirs. Yoimbine (12 mg) was used to accelerate patient recovery and total recovery was observed four hours later. Cardiac and respiratory frequencies, as well as corporeal temperature suffered fall during the restraint period for both animals and reversible apnea was observed in the female. The association of alpha-2 agonist drugs was satisfactory and presented a short induction time, even under high stress. Although caution is necessary to apply this protocol in field conditions, considering the undesirable reactions observed.

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(28) CHEMICAL RESTRAINT OF TWO BRAZILIAN TAPIRS (*Tapirus terrestris* Linnaeus, 1758) WITH ROMIFIDINE, AND ANTAGONISM BY ATIPAMEZOLE

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Two adult Brazilian tapirs (male and female) were sedated for clinical procedures. It was used romifidine, an  $\alpha_2$  adrenergic agonist, associated to atropine sulfate. Doses were calculated by interspecific allometric scaling. The dose of romifidine for the 230 kg female was established using as model the high dose for a 500 kg horse (0.12 mg/kg), resulting in a dose of 0.146 mg/kg. For the 200 kg male a dose of 0.126 mg/kg was calculated by scaling the medium dose for a 500 kg horse (0.10 mg/kg). The dose of atropine was established using as model the dose for a 10 kg dog (0.05 mg/kg). The drugs were combined in a syringe and administered intramuscularly. The sedation of both individuals was adequate - they remained in calm and relaxed in standing position, permitting clinical examination and blood collection. The patients were medicated with intramuscular atipamezole (0,11 mg/kg) at the 30<sup>th</sup> minute. In the female the reversion effects were seen from 3 to 10 minutes after the antagonist injection - the patient walked and swam normally between 10 and 20 minutes after yohimbine. The male, however, did not show any signs of rapid reversion, taking 40 minutes to walk and 70 minutes to swim.

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(29) CHEMICAL RESTRAINT OF THREE BRAZILIAN TAPIRS (*Tapirus terrestris* Linnaeus, 1758) WITH ROMIFIDINE, AND ANTAGONISM BY YOHIMBINE

**José Ricardo Pachaly**<sup>1</sup>, Wanderlei de Moraes<sup>2</sup>, Thiago Cavalheri Luczinski<sup>3</sup>, Raul Henderson Avila Jr.<sup>3</sup> & Elza Maria Galvão Ciffoni<sup>1</sup>

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Three adult Brazilian tapirs (one female and two males) were sedated for physical examination and marking procedures. It was used an  $\alpha_2$  adrenergic agonist (romifidine, Sedivet®) associated to atropine sulfate. The doses of both drugs were calculated by interspecific allometric scaling. The dose of romifidine was established using as model the medium dose for a 500 kg horse (0.10 mg/kg), and the dose of atropine was established using as model the dose for a 10 kg dog (0.05 mg/kg). The calculated doses for romifidine were 0,121 mg/kg (230 kg female), 0.129 mg/kg (180 kg male) and 0.126 mg/kg (200 kg male). The drugs were combined in a syringe and administered intramuscularly. This was considered as time zero. The sedation of male individuals was adequate, but the female required two new half doses to permit manipulation. Even so its sedation was not satisfactory, forcing the use of physical restraint. The patients were medicated with intramuscular yohimbine (0,06 mg/kg) at the 30<sup>th</sup> minute (males) and 50<sup>th</sup> minute (female). The reversion effects were seen from 3 to 10 minutes after the antagonist injection. All the animals walked, ingested food and water and swam normally between 10 and 20 minutes after yohimbine.

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(30) FIELD TRIAL ON CHEMICALLY RESTRAINING A BRAZILIAN TAPIR (*Tapirus terrestris* Linnaeus, 1758) WITH ROMIFIDINE

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A 180 kg young adult male Brazilian tapir was sedated for testing the effects of the combination of the alpha<sub>2</sub> adrenergic agonist romifidine hydrochloride to atropine sulfate. Doses of both drugs were calculated by interspecific allometric scaling. The dose of romifidine was established using as model the medium dose for a 500 kg horse (0.10 mg/kg), and the dose of atropine was established using as model the dose for a 10 kg dog (0.05 mg/kg). The calculated doses were 23.23 mg (0.129 mg/kg) for romifidine and 4.37 (0.024 mg/kg) for atropine. The drugs were combined in syringe and administered intramuscularly. This was considered as time zero. Mild sedation was attained at the 10<sup>th</sup> minute, but the animal remained capable to react against manipulation. At the 15<sup>th</sup> minute a new dose of romifidine (0,066 mg/kg) was given. The patient remained standing and permitted physical examination and blood collection (30<sup>th</sup> minute). Between 38<sup>th</sup> and 63<sup>rd</sup> minute it fell down four times and struggled to return to standing position, showing discomfort in laying down. At the 65<sup>th</sup> minute the clinical conditions were normal and the patient urinated and ingested food and water. At the 73<sup>rd</sup> minute it entered its pool and swam normally.

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**(31) CHEMICAL RESTRAINT OF AN AGGRESSIVE MALE BRAZILIAN TAPIR (*Tapirus terrestris* Linnaeus, 1758) WITH ROMIFIDINE, AND ANTAGONISM BY YOHIMBINE - CASE REPORT**  
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A very aggressive adult male Brazilian tapir (*Tapirus terrestris*) was sedated for physical examination and dental procedures. It was used an alpha<sub>2</sub> adrenergic agonist (romifidine, Sedivet®) associated to atropine sulfate. The doses of both drugs were calculated by interspecific allometric scaling. The dose of romifidine was established using as model the medium dose for a 500 kg horse (0.10 mg/kg), and the dose of atropine was established using as model the dose for a 10 kg dog (0.05 mg/kg). The patient's weight was estimated in 250 kg and the calculated doses were 29.73 mg (0.119 mg/kg) for romifidine and 5.59 (0.022 mg/kg) for atropine. The drugs were combined in a dart and administered with a blowgun. This was considered as time zero. Signs of romifidine effects began 2 minutes after darting, and perfect sedation was attained at the 10<sup>th</sup> minute. The patient remained in standing position but was very calm and relaxed, unable to react to manipulation and permitting physical examination, teeth evaluation and blood collection. At the 30<sup>th</sup> minute it was medicated with IM yohimbine (0.56 mg/kg). Body movements started at the 39<sup>th</sup> minute and complete recovering was accomplished at the 65<sup>th</sup> minute.

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**(32) IDENTIFICATION OF AEROBIC BACTERIA FROM INTERNAL ORGANS OF *Tapirus bairdii* FROM MIGUEL ALVAREZ DEL TORO REGIONAL ZOO, CHIAPAS, MÉXICO**

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We analyzed the intestinal flora of two Baird's tapirs that died at Miguel Alvarez del Toro Regional Zoo (ZooMAT), in Tuxtla Gutiérrez, Chiapas, México. We isolated bacteria from the respiratory, digestive, and reproductive systems of the specimens by means of the Gram (-) API 20 and NE techniques. The bacteria were cultivated in aerobic conditions at 37°C, and they were taxonomically determined through their pigmentary properties, individual and colonial morphology, biochemical characteristics, and carbohydrate fermentation. We found *Escherichia coli*, *Corynebacterium pseudotuberculosis*, *Rhodococcus equi*, *Actinomyces sp*, *Flavobacterium* IIb group, *Pseudomonas pseudomallei*, *Staphylococcus aureus*, *Aeromonas salmonicida*, *Agrobacterium radiobacter*, and *Pasteurella sp* Type A in the samples. These species constitute new records for Baird's tapir intestinal flora in Mexico. The proportional distribution of bacteria found in the digestive system (n=26) consisted of 57% for *Escherichia coli* and 14% each for *Corynebacterium*

*pseudotuberculosis*, *Rhodococcus equi* and *Actinomyces sp.* The distribution found in the respiratory system (n=10) was of 20% each for *Agrobacterium radiobacter*, *Pasteurella sp* Type A, *Rhodococcus equi*, *Flavobacterium* group IIb, and *Pseudomonas pseudomallei*. The same data for the reproductive system consisted of 50% for both *Staphylococcus aureus* and *Aeromona salmonicida*.

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### (33) CAPTURE MYOPATHY IN BAIRD'S TAPIR *Tapirus bairdii*: A CASE FROM CHIAPAS, MÉXICO

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Here we present the clinical scene, as well as the macro and microscopic wounds present in a Baird's tapir captured in La Sepultura Biosphere Reserve, and donated to the Miguel Alvarez del Toro Regional Zoo (ZooMAT) in Tuxtla Gutiérrez, Chiapas, México. This tapir was captured and transported in unfavorable conditions, ataxic, with poor answer to external stimuli, depressed, with tachycardia, tachypnea and hypothermia, as well as *post mortem* observation of congestion in lung, liver, thin intestine and kidney; subcutaneous hemorrhages in internal tissues, pale and white areas in muscles, necrotic zones in cardiac muscles and empty bladder. Based on these observations, we inferred that the animal suffered a capture myopathy. In this way we confirmed that, in addition to data from pathologic studies such as immunological depression caused by lymphoid depletion of the spleen, necrotic stomach mucous associated with thrombosis, activity of the lymphatic ganglion in the duodenum, congestion, necrosis and edema of the lymphatic ganglions, as well as vascular damage, the animal was exposed to a viral or bacterial agent that increased its state of susceptibility and complicated it to a morbid process, as it was observed from the transfer to the death of the animal.

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### (34) IDENTIFICATION OF ECTO AND ENDOPARASITES IN THE CENTRAL AMERICAN TAPIR *Tapirus bairdii*, IN CHIAPAS, MÉXICO

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The purpose of this study was to assess the parasitism of Baird's tapir in Chiapas, México. We analyzed 19 samples of Baird's feces from La Sepultura Biosphere Reserve collected between March and July 1999. We also took samples directly from a male tapir captured at Montes Azules Biosphere Reserve. We used the techniques of flotation, MacMaster, micrometric, sedimentation of Ritchie (formol ether) for preserved samples, and Ferreira's quantitative. In addition, we collected ectoparasites from animal captured at both La Sepultura and Montes Azules reserves as well as from a couple maintained in captivity at "Miguel Alvarez del Toro" Regional Zoo (ZooMAT) in Tuxtla Gutiérrez, Chiapas. The following new genera of gastrointestinal nematodes and protozoa were found: *Agriostomun sp*, *Lacandoria sp*, *Neomurshidia sp*, *Trichostrongylus sp*, *Strongylus sp*, *Brachylumus sp*, and a species of ancilostomide. We also detected the presence of *Eimeria sp*, and *Balantidium coli*, as well as the mites: *Dermacentor halli*, *Dermacentor latus*, *Amblyomma cajannense*, *Amblyomma coelebs*, *Amblyomma ovale*, *Anocentor nitens* and *Ixodes bicornis*.

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### (35) CAPTURE AND IMMOBILIZATION OF FREE-RANGING BAIRD'S TAPIRS IN CORCOVADO NATIONAL PARK, COSTA RICA

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The Baird's tapir is currently listed as Vulnerable as established by the 1996 IUCN Red List of Threatened Animals. Despite its general category of vulnerable, this species of tapir is likely to be considered endangered with extinction in most countries. Historically, this species ranged from southeastern Mexico, from the northern portion of Colombia to the Gulf of Guayaquil in Ecuador. Today this species occurs west of the Andes in Colombia and Ecuador. Its confirmed current range in Central America is limited to areas sparsely populated by humans and isolated populations in protected areas of Mexico, Belize, Honduras, Costa Rica, Panama and possibly Nicaragua. It is considered extinct in El Salvador. As with most large, solitary mammals, tapir populations are normally found in low densities. The primary pressures on their numbers are habitat loss and excessive hunting. Due to the tapir's low reproductive potential and slow growth, even minimal hunting has proven to significantly decrease their populations [4]. Consequentially, these smaller populations become even more susceptible to extinction from natural disasters and disease epidemics. In Costa Rica, the primary threat to the Baird's tapir is deforestation due to logging and farming practices. It is estimated that 80% of Costa Rica has been deforested. In Corcovado National Park, gold mining also poses an important threat to their habitat. Without reliable information on the basic ecological requirements of tapirs (habitat use, home range, demographics, etc), it will be impossible to develop an effective strategy for sustaining free-ranging populations. Until recently, researchers have relied on indirect methods such as track counts, fecal examination and transect counts to estimate population densities, habitat use and diet. These methods, though useful, are limited in the scope of data they can provide. Until 1995, only two previous studies had utilized direct methods to gather such data in tapirs. During the last few years, more tapir researchers have elected to employ radio telemetry to monitor the movements of their study animals. As a result, there has arisen a need for an effective protocol for the immobilization of free-ranging tapirs that is safe for the animals as well as the researchers. Since 1994, the authors have studied the ecology and health of a small population of Baird's tapirs in Corcovado National Park, Costa Rica. The project aimed to define basic ecological details such as home range, habitat use, activity patterns, diet, disease susceptibility and reproduction. In this presentation we aim to describe the basic capture and immobilization method utilized from March 1996 to February 2000 to radio collar the study animals. The animals were captured by first setting up bait stations. Bananas were used to attract the tapirs to bait stations. Tree platforms were constructed in trees overlooking the bait stations. The veterinarian and the project biologist sat upon such platforms to await the presence of animals coming to forage on bananas. The animals were darted from the platform with a combination of butorphanol/xylazine. Ketamine was used to lengthen the duration of the immobilization period. Tolazoline and naltrexone were used to reverse the effects of the immobilization drugs.

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**(36) HEALTH ASSESSMENT OF A RADIOCOLLARED POPULATION OF FREE-RANGING BAIRD'S TAPIRS IN CORCOVADO NATIONAL PARK, COSTA RICA**

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Despite the fact that tapirs are the largest land mammals in Central America, few studies have been done to establish their health status and susceptibility to disease. Currently, a small population of tapirs is being monitored for a related ecological study in Corcovado National Park, Costa Rica. During the course of immobilizing these animals, blood has been collected (n=17) for complete blood cell counts and serum chemistry. A comparison of these values from the free-ranging population and MedArks reference values is currently underway and results will be presented. Although few infectious diseases are reported to affect captive tapirs, several institutions recommend the vaccination of tapirs for EEE, VEE and WEE and Leptospirosis. This free-ranging population in Costa Rica was tested for the following serology: Eastern

equine encephalitis, Venezuelan equine encephalitis, Western Equine Encephalitis, Brucella, Equine Infectious Anemia and Leptospirosis. Findings from this survey will be presented. Fecal material has been collected and analyzed for parasites. Ticks have been collected and have been identified as either *Amblyomma oblongoguttatum* or *A. coelebs*. Rectal bacterial cultures isolated have shown *Streptococcus* sp., *Rhodococcus* sp. and diptheroids. Information gained from this study will greatly contribute to concurrent tapir field studies as well as captive populations.

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### (37) KEYNOTE SPEAKER: AREA DE CONSERVACIÓN GUANACASTE, COSTA RICA

#### **Daniel Janzen**

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The only way that tropical biodiversity will survive is through its integration with humanity - use it or lose it. The Area de Conservación Guanacaste in northwestern Costa Rica is a pilot project in the specifics and realities of such an integration.

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### (38) PROJECT TAPIR: DESIGNING A PLAN TO REINTRODUCE THE LOWLAND TAPIR (*Tapirus terrestris*) IN THE RESERVES OF THE UNIVERSIDAD NACIONAL DE TUCUMÁN, ARGENTINA

#### **Juan Pablo Juliá<sup>1</sup> & Cristiam Simón Abdala<sup>2</sup>**

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The tapir is extinct in the province of Tucumán (Argentinean Northwest) since 1940 and is “Endangered” in Argentina. The Universidad Nacional de Tucumán (UNT) have two reserves in the province, the Reserva Universitaria Sierra de San Javier (14.000 ha) and the Reserva Experimental Horco Molle (REHM, 200 ha). They are located at 15 km to the west of the city of San Miguel de Tucumán. In the REHM, exist a breeding program of tapir in semi captivity and an environmental education program. The tapir could act as an umbrella species and help to the conservation of endangered ecosystems in the province. The REHM, have the objective to reintroduce a population of 40 to 70 reproductive individuals inside university reservations and to keep interconnection with the rest of the province reservations. We hope to imply in the project the UNT, no government organizations and the government of the province of Tucumán. Environmental education will make a special emphasis in hunters and local population. We hope to generate alternative economic resources for the local population, like ecotourism and local works for pursuit of the reintroduce animals. The animals to reintroduce will have quarantine in the REHM, some of which will be use also as reproducers. We shall include an intense pursuit post liberation, let us to evaluate the results and to give a maximum flexibility to the project.

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### (39) BEHAVIOR OF THE BAIRD’S TAPIR IN CAPTIVITY, IN CHIAPAS, MÉXICO

#### **Iván Lira Torres<sup>1</sup>, Epigmenio Cruz Aldán<sup>1</sup> & Sergio Guerrero Sánchez<sup>1</sup>**

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With the purpose of knowing the individual and reproductive behavior of the Central American Tapir *Tapirus bairdii*, we did a study with a pair of adult animals maintained in captivity in “Miguel Alvarez del Toro” Regional Zoo, in Tuxtla Gutierrez, Chiapas, Mexico. By means of systematic registries and focal observations we obtained 5264 behavioral events, which were described and classified in 27 categories. Of this total, 2586 events corresponded to the female and 2678 to the male. Most of these events (2424), were emitted by the female, which represented 93,73%. Of the total emitted by her, 2245 (92.69%) were individual records and 177 (7.30%) were reproductive. In the case of received events by the female, 58 (35.80%) were individual and 104 (64.19%) were reproductive ones. In the case of the male, 2570 were emitted events (95,97%), and 108 were received (4.03%). Of total events emitted by the male, 2344 (91.20%) represented individual records and 226 (8.80%) were reproductive. In the case of the received events, 42 (38.88%) were individual and 66 (61.11%) were reproductive. Although many of the individual behavioral were similar, they showed noticeable differences regarding the courtship and mating. Both animals displayed intense activity in these aspects.

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#### (40) EFFECTS OF ENCLOSURE DESIGN ON TAPIR LIFE HISTORY TRAITS

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Zoological parks play an increasing role in wildlife conservation as more species are threatened with extinction in their native habitat. Thus, the environment provided within the zoo can be critical for the survival of wildlife species until the causes for decline have been identified and remedied. Through the last century, zoo enclosures have transformed from simple square cages into more complex "naturalistic" areas. Few studies, however, have examined the effects of enclosure attributes on the health, longevity, mortality, and breeding success of captive animals. As a consequence, curators have little scientific information on how to optimally design enclosures for species. Captive management of tapirs, especially the Malayan (*Tapirus indicus*) and lowland (*T. terrestris*), has been fairly successful in recent years, despite their threatened and endangered status in the wild. Due to this ease of management, enclosure design may appear to be inconsequential to maintaining a self-sustaining captive population. However, individual variation between and within the species can influence optimal enclosure design for attaining captive management goals. Knowledge of how enclosure attributes affect life history traits for tapirs can be applied to improve captive management for all species of tapirs, as well as to provide a better understanding of tapirs themselves.

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#### (41) DEVELOPMENT OF A CAPTIVE MALAYAN TAPIR (*Tapirus indicus*) AT WOODLAND PARK ZOOLOGICAL GARDENS

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Malayan tapirs (*Tapirus indicus*) born in captivity rarely survive to adulthood due to stillbirths, failures of mother-infant bonds, neo-natal diseases, and accidents. Despite such serious issues, very little literature is available on mother-infant behavior and development. Development of Malayan Tapir calves is expected to closely approximate that of *Tapirus terrestris*, with *T. indicus* spending less time with its mother and displaying more "hider" behaviors. The following was a study of a female Malayan tapir's behavior before and after giving birth, along with her behavior towards her calf and its development. This study took place at the Woodland Park Zoological Gardens in Seattle, Washington in the spring and summer of 2000 for the first seventeen weeks after birth. Data were gathered utilizing instantaneous scans, focal animal sampling, and one-zero sampling that involved an observer noting what types of behavior, such as feeding, locomotion, resting, standing, swimming, spraying, vocalizing, licking, nuzzling, and nursing occurred at set intervals of time onto a datasheet. Rate and percentage of time spent in each type of activity were calculated and compared over time as the calf grew. Comparisons of *T. terrestris* and *T. indicus*, using a t-test, showed no significant differences in calf development. The female tapir was found to spend most of her time resting, feeding, and moving (locomotion). The activity budgets for two lactating adult females, *T. terrestris* versus *T. indicus*, using a Chi-Square Test, showed no significant differences between the two. The adult female Malayan tapir displayed increased spraying during the 3 & 4 week of the study, along with increased vocalization during the 7th, 12th, and 16th week after parturition. The calf displayed major development changes with dentition appearing in the 1-2 week, feeding on solids by the 2-3 week, swimming by the 9th week, and rapid weight gain. Mother-calf association measures showed the female tapir and the calf preferred to be less than one mother length from each other when given a choice. Mother or calf equally initiated nursing bouts that lasted about 10 minutes on average and occurred most often in the afternoon.

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#### (42) COVERED CURIOSITIES? WAYS TO INCREASE NATURAL BEHAVIOR AND PUBLIC EDUCATION IN CAPTIVE TAPIRS

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Because of their endangered status and systematic uniqueness, tapirs become appropriate inhabitants of zoological gardens. However, exhibit design and maintenance conditions often do not adequately meet the mission of presenting the animals in a highly educative way. This results from a study conducted for the first

time on behavior and public perception of all tapir species in captivity. A good visibility or a high level of activity is favoring public attention to the animals. Depending on the type of enclosure, the amount of observers ranges between 26% and 94% of all passing people. The most conspicuous Asian tapir is easily overlooked when resting behind fences and therefore receives least attention of all species. Mean observation time of any tapir drops below half a minute while lying and rises above two minutes with keeper contact. Thus, management should be more visitor oriented. Natural vegetation and outdoor feeding can reduce resting periods below 60% during the day. Access to exhibits and availability of browse are seasonally restricted in temperate climates. Poor grounds and missing pools do not give right impressions of tapir ecology. Mixed species exhibits with viewpoints attract most visitors and obtain best judgments. With environmental enrichment, the animals display a variety of natural behavior in captivity: This not only supports their activity and health, but also increases their entertainment and educational value. Knowledge and enthusiasm are necessary to motivate the public for an interest in conservation. And tapirs still could benefit from a higher degree of popularity.

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#### (43) MANAGEMENT OF TAPIRS AT THE LOS ANGELES ZOO

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The Los Angeles Zoo currently maintains two species of tapirs. From 1968 to 1971, the zoo exhibited all four species of tapir. This is the first time that a zoo was able to exhibit and breed all four species.

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#### (44) VOLUNTARY MEDICAL SAMPLING OF TAPIRS AT THE AUDUBON ZOO

**Kathy Topham DVM<sup>1</sup> & Sheila Barrios<sup>1</sup>**

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At Audubon Zoo we house our 1.2 Lowland Tapirs (*Tapirus terrestris*) in a 1.5 acre mixed species exhibit. Due to the fact the tapirs are closely related, we wanted to inhibit reproduction while continuing to house them together. We chose to use 1000 mg Depo Provera intramuscularly (Medroxyprogesterone Acetate Injection), which for our tapirs was 5.0 and 5.4 mg/kg respectively. We decided to monitor the success of the injections by measuring serum progesterone levels through collecting blood from both females weekly. It is a natural behavior of tapirs to respond to scratching and rubbing by slowly sitting, followed by rolling into lateral recumbency. They become somewhat sedate if the trainer continues to scratch along the abdomen. All three tapirs were subsequently trained using operant conditioning techniques to lie laterally recumbent, and accept blood collection from the medial saphenous vein using operant conditioning techniques. Training sessions were short but daily. The animals were lightly scratched along the dorsum, and flanks and abdomen until they were positioned laterally. Once they consistently performed this behavior we introduced the equipment and the personnel (phlebotomist) at each session. Once the tapirs accepted that, we began stepwise to palpate the region of the medial saphenous, followed by blunt pressure, and then ultimately introduced a 23 gauge butterfly catheter and syringe. After collection of the sample, the animal was offered a food reward as positive reinforcement. We found this conditioning quite useful, and have since the start of the training program been able to perform other medical procedures safely. It is easier to monitor body weights, obtain radiographs and ultrasound images with portable machines, and can collect core body temperatures with rectal thermometers. Last year we had the opportunity to anesthetize one of our females to suture a wound using the training techniques. Objectively, we used less anesthetic to complete our task. Subjectively, the procedure was smoother and less traumatic than prior anesthetic events. Overall, the increased contact and training with these animals has improved our ability to care for them in captivity.

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#### (45) *Tapirus pinchaque* POPULATION MANAGEMENT

**Jaime Andrés Suarez Mejía**

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General goals of this university graduation project are to develop a management model for mountain tapir conservation at the Central Andes of Colombia. Specific goals are to build a regional strategy for mountain tapirs management, to formulate a regional action plan for *Tapirus pinchaque* at the study zone; and, to

design a pursuit and evaluation system for the measurement of the action plan accomplishment. The methodology will be based on an adaptation of the national biodiversity strategic planning (U.I.C.N., W.R.I, P.N.U.M.A). The evaluation process will: identify the institutional frame for the biodiversity and protected areas; analyze the biodiversity national policies and the technical proposal for their implementation; and, identify the legal policies, economical application (tools) for threatened species conservation. The project will: create a scientific and institutional support group for the elaboration of the strategy; elaborate an opinion interchange format with foreign tapir experts; and, create a support group with community members, forest keepers and ex-hunters. This strategy will: build as a group for the regional strategy for the mountain tapir and, establish the management goals for the mountain tapir preservation in the zone. The PROMME (action plan) will specify the administrative structure of the plan and estimate the cost and financial mechanisms of the plan. The pursuit and evaluation will measure the action plan goals effectiveness and accomplishment.

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#### (46) WILDERNESS AREA CONNECTIVITY AND CHANGES IN TAPIR HABITAT AVAILABILITY IN NORTHERN MESOAMERICA

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Habitat connectivity is crucial for the persistence of many species, including tapirs. Habitat loss is frequently cited as one of the main factors threatening tapirs, but it is rarely documented and quantified properly. I identified, based on a remote sensing analysis, the large wilderness areas with tapir (*Tapirus bairdii*) habitat and their connectivity in northern Mesoamerica (southern Mexico, Belize, Guatemala, El Salvador and portions of Honduras and Nicaragua). Additionally, I analyzed the changes on tapir habitat availability in a 2.7 million ha area in southern Mexico and northern Guatemala. I considered the regional variability of these changes and the effect of variation in management and development trends. Based on data from a remote sensing, land-cover change analysis (1974-1986), I created simple linear Markov models for a heuristic tool to simulate changes in tapir habitat availability over a 60-year period. Tapir habitat availability was highly variable between the nine sub regions I considered. Likewise, changes in management and development policies and trends in the study area will lead to contrasting habitat availability for tapirs. The approach I used is useful for assessments of species habitat availability and survival perspectives, considering how different development trends and management practices may affect them.

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#### (47) ASSESSING THE EFFECTIVENESS OF PROTECTED AREAS FOR TAPIR CONSERVATION IN MESOAMERICA

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Protected areas are often cited as an essential component of biodiversity conservation programs. Many countries have based their national conservation policies on such areas. How effective are these areas? Are they achieving their proposed goals? Are they contributing to tapir conservation? We present two case studies that assess protected areas effectiveness in promoting tapir (*Tapirus bairdii*) conservation in Mesoamerica. We looked at changes in tapir habitat availability in two protected areas, Reserva de la Biósfera Montes Azules and Parque Nacional Palenque, in Chiapas, Mexico, and compared them with non-protected areas in that state. Habitat loss rates in these protected areas were lower than in non-protected areas, but for different reasons in each case. We also compared the abundance of tapirs in two Costa Rican protected areas, Parque Nacional Corcovado (PNC) and Reserva Forestal Golfo Dulce, with similar environmental characteristics but different hunting restrictions and levels of protection, and monitored the abundance of tapirs in PNC over a 4-year period. The main factor differentiating the abundance of tapirs in these two Costa Rican protected areas and at PNC during the study period was the level of hunting. Mesoamerican protected areas are playing an important role in tapir conservation, but they are not entirely successful.

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**(50) SOCIAL DYNAMICS IN CONSERVATION PLANNING AND IMPLEMENTATION****Susie Ellis<sup>1,2</sup>**

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Strategic planning initiatives for conservation action have traditionally focused exclusively on the biology of the species or biological system in question. However, such initiatives often have been carried out in the absence of consideration of the parallel systems dynamics at play among varied stakeholders. Processes to facilitate positive conservation action must be based on sound science and to maximize chances for success must involve a wide range of stakeholders with an interest in the future of the species or biological system in question. One type of process, the Population and Habitat Viability Assessment (PHVA) developed by IUCN's Conservation Breeding Specialist Group, involves expert facilitation with intensive examination of existing published and unpublished data, use of a neutral computer simulation modeling tool to examine the assumptions and complexities of existing conditions and management strategies on the risk of extinction, as well as sensitivity analyses to examine potential effects of alternative management activities. The social context of these processes provides a non-hierarchical environment for communication, analysis and collaborative thinking that leads to mutual understanding of stakeholder perspectives, development of realistic and achievable conservation action plans and, often, new collaborative partnerships. This paper will discuss examples focusing on the human dimensions/systems at play in the development and implementation of management strategies for several of the most threatened species in the world, and their implications for tapir recovery planning and management.

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**(51) EVENING PRESENTATION: IDEA WILD****Wally Van Sickle**

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IDEA WILD is a non-profit organization from the United States working to minimize the loss of biodiversity by empowering people on the front lines of conservation in Latin America with equipment and supplies. We provide binoculars, global positioning systems, mist nets, telemetry, computers, cameras, climbing ropes, etc. to biologists and educators working to conserve biodiversity. In ten years we have provided equipment to over 1500 people in 26 countries. Our slide presentation will introduce you to many of these projects and explain the application process. If you have ever been short of equipment for your conservation research or education efforts, or know someone who has, you do not want to miss this one!

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**(52) WORKSHOP 1: MARKETING AND MEDIA AFFAIRS****Diane Ledder<sup>1</sup> & Patty Peters<sup>2</sup>**

<sup>1</sup> Disney; E-mail: Diane.Ledder@disney.com

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**(53) WORKSHOP 2: TAPIR ACTION PLAN: REVIEW, EXPAND AND PRIORITIZE****E. Patrícia Medici**

Research Coordinator, Lowland Tapir Project, IPÊ - Institute for Ecological Research  
Chair, IUCN/SSC Tapir Specialist Group; E-mail: epmedici@uol.com.br

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**(54) WORKSHOP 3: IUCN/SSC TAPIR SPECIALIST GROUP: FUTURE PERSPECTIVES****E. Patrícia Medici**

Research Coordinator, Lowland Tapir Project, IPÊ - Institute for Ecological Research  
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(54a) NOTES ABOUT THE IUCN RED LIST CATEGORIES AND CRITERIA PROCESS  
(Presentation based on Red List Categories training materials, prepared by IUCN / Species Survival Commission - UK)

**Ana Virginia Mata Ferreto**

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The IUCN Red List Categories is a system for classifying species at high risk of extinction under past, current and future conditions, based on population size, geographical distribution, quantitative analysis, known threats as well as trends in these measures. The system may be applied to taxonomic units at the species level and below; to wild populations inside their natural range and populations resulting from being introductions. The quantitative criteria for the classification of threatened taxa in the IUCN Red List, were adopted by the IUCN Council in 1994 (Version 2.2), and some modifications were introduced in 2001 (Version 3.1), such as Lower Risk Conservation Dependent Category removal, few criteria changes and guidelines dealing with uncertainty. The appropriate assessment of the categories relies on the quality of the scientific information available, the proper understanding of the terms definitions used for each criteria and the reduction of measurement error (by acquiring additional data). Assessors attitudes toward risk and uncertainty also affect the assessment process, depending on if they have a low or high dispute tolerance and a precautionary or evidentiary attitude. The updated Red List categories for tapir species (TSG/SSC), is an example of the problems that can emerge during an assessment process: 1) To get the necessary data to fill out the assessment forms; 2) To understand the categories and apply criteria to the data; 3) To figure out what data was really important for the assessment process

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(55) WORKSHOP 4: FUND RAISING

**Wally Van Sickle**

President, Idea Wild

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(56) KEYNOTE SPEAKER

**William R. Konstant** (on behalf of Dr. Russell Mittermeier)

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At a time when scientists suspect that we have documented only a small fraction of Earth's living micro-organisms, fungi, plants and animals, and warn that we are in danger of losing species at a rate much faster than we can even hope to describe those that remain unknown, conservation biologists strive to develop targeted strategies to protect our planet's threatened biodiversity. In that regard, Conservation International has focused its attention on at least 25 "hotspots", biologically the richest, most unique and most threatened terrestrial ecoregions, and on several major tropical wilderness areas that are also species rich, but more expansive geographically and relatively well intact by comparison to hotspots. By focusing on hotspots and wilderness areas, conservation professionals can home in on specific areas of the planet where species survival efforts are likely to have their greatest effects. The practical applications of this conservation strategy are discussed for various groups of organisms, including tapirs.

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(57) CONSERVATION PROGRAM OF THE WOOLY TAPIR (*Tapirus pinchaque*, Roulin 1829) IN THE DEPARTMENT OF TOLIMA - COLOMBIA

**Franz Kaston Flórez**

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The Tolima Department is placed on the oriental flank of the Central Colombian Cordillera, with an extension of 234143 hectares of mountain forest where this tapir can be found. In 1998, the Tolima Autonomous Regional Corporation hired the inventory of this species in the Department, job that was developed by Cavalier and Lizcano, giving an approximated number of 468 individuals. This year, and continuing with the conservationist-investigative job, begins the sanitary evaluation where is stated to develop five expeditions to take samples of tissues, feces, morphometric measures, telemetric collar installation, video and photography. With this material will be made tests like hemoparasites, ectoparasites, hematocritum, serum analysis to total proteins and other fluids, count and morphology of white and red cells, ADN extraction to population genetic studies, all this, to be near to know the health condition of the wild populations of the Tolima Department. At the same time and inside of this research, begins the careful planning of an *in-situ*

breeding program at the Tolima Department, because it has protected areas of primary "montano" forest (upwards of 1200 m) and paramo as same as other advantages to this purpose.

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**(58) BREEDING & HUSBANDRY OF THE MALAYAN TAPIR (*Tapirus indicus*) AT MOUNTAIN VIEW FARMS CONSERVATION AND BREEDING CENTER**

**Oscar Long<sup>1</sup>, Gordon Blankstein<sup>1</sup> & John Carnio<sup>1</sup>**

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Mountain View Farms Conservation and Breeding Center specializes in endangered small cats and hoof stock. The Malayan tapir is one of the species that the Center has successfully bred. A pair of Malayan tapirs (on loan from the Toronto zoo and the Milwaukee zoo) is housed in a large 10-acre paddock and 24 ft. x 48 ft. four-stall barn. The pair successfully bred and produced calves in 1998 and 2001. The husbandry of the tapirs and the development of the 1998 female calf are described. The female was separated from the male and locked in the barn on July 20, 1998, the day she gave birth. The female and calf were reintroduced to the male when the calf was 13 days old. That same day they were allowed outside and went swimming for the first time. The calf started to eat solids at 27 days of age and was completely weaned by 6 months of age. The coat color began to change at 6 weeks and was completely changed by 4 months of age. While tapirs do not require such large captive habitats in order to reproduce the large enclosure does allow the animals to behave more normally. Galloping and hiding of the young were frequent events not normally seen in smaller enclosures. The hands-on approach with routine rubdowns has kept the animals very tractable and easy to examine even in this large enclosure. The routine handling has kept the tapirs calm and willing to be touched by the keepers, allowing manipulation of her udder to stimulate milk production shortly after the birth. Staff was also able to handle and examine the youngster a few days later without concern from the mother. The young female has now been introduced to a male on loan from the San Diego Zoo, and breeding was observed on June 29, 2001, the same day that her mother gave birth to a second calf.

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**(59) COMPARATIVE BEHAVIOR AND PUBLIC PERCEPTION OF TAPIRS (*Tapirus* sp.) IN ZOOS**

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Tapirs belong to the least well-studied large mammals of our time. A comparative study investigated the behaviour of these animals in captivity as well as the reactions of the visiting public. Between 1997 and 2000, research took place at nine zoological gardens in Germany, Switzerland, and the United States. Based on ethological methods, observations of some 40 individuals of the four species *Tapirus indicus*, *T. terrestris*, *T. bairdii*, and *T. pinchaque* and more than 25,000 zoogoers during 1,628 hours of observation lead to revealing results. Differences in behaviour are more conspicuous between individuals than between the species. Some patterns of the Asian and the lowland tapir are of a special quality. The animals in mean remain 65.2% resting, 26.6% moving, and 8.2% feeding on the outdoor enclosures during daytime. Distances between individuals indicate their degree of social relationship. Sometimes, interspecific contacts become even more important. Tapirs are curious and learn quickly, but they have little perseverance in manipulating objects (e.g. feeder). Visitors give best judgements to naturally shaped enclosures including a variety of plants; a rich supply of water, and mixed species exhibits along with well located and clearly arranged signboards. The mountain tapir reaches highest public acceptance. Tapirs are compared and confused with 86 different species, all above with anteaters. Results can support a better understanding of natural and adaptive behavior in tapirs and be useful for optimizing animal maintenance and public education.

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**(60) DEVELOPMENT OF MOLECULAR GENETIC MARKERS FOR THE ASSESSMENT OF POPULATION GENETIC VARIABILITY IN BAIRD'S TAPIRS, *Tapirus bairdii*, AND THEIR POTENTIAL FOR BROADER USE IN THE INVESTIGATION OF WILD TAPIR POPULATIONS**

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We report the results of an initial assessment of genetic variability in wild and captive populations of Baird's tapirs, *Tapirus bairdii*. Using six variable microsatellite genetic markers we developed from genomic libraries of *T. bairdii* and *T. terrestris*, we genotyped 56 Baird's tapir samples from wild and captive populations. Our sample set includes 29 samples from across the range of Baird's tapirs, including Belize, Costa Rica and

Panama, and 36 of the 80 animals in the AZA International Studbook. We identified two to five alleles at each microsatellite loci and measured the allelic diversity and heterozygosity within our samples of wild and captive populations. In addition, we demonstrated the use of a sex chromosome specific genetic marker to identify the sex of tapirs with DNA extracted from hair root bulbs, providing a potential technique to collect population sex ratio data using non-invasively collected hair and feces. Molecular genetic data has been used to investigate the mating systems, dispersal patterns, population structure and effective population sizes of species, like tapirs, that are difficult to directly study in the field (e.g. polar bears, migratory birds, cetaceans). The microsatellite markers we present here provide a new tool for studying wild tapir populations.

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#### (61) NOTE ON MALAYAN TAPIR IN WEST SUMATRA, INDONESIA

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Part of serial research studies focused on Malayan Tapir has been done in West Sumatra. The main study area located at Pesisir Selatan district (Taratak village). The type of habitat varied from primary forest, mature secondary forest, old plantation, new plantation, and riverside, from 100 m ASL until 500 m ASL elevation. Study on feeding behavior conducting in Taratak village and concession area, Census, Habitat analysis, and dispersion study conducted only in Taratak village. The forest around Taratak village has been protected as a water catchments area, but during the studies the forest edge has been cutting to make a new plantation. The old rubber plantation also has been converted to be a *Gambir* (*Uncharia gambir*) plantation. This activity causation the forest fragmented, new gap, and land clearing. However the pioneer trees and shrub growing up, and will be a good food storage for the Malayan tapir, also as an individual Malayan tapir can escape from this problem, but in the long-term period this activity make barrier for the tapir to get access to the water, salt lick, forest corridor and forest as their home. In fact the Malayan tapir population in Taratak village has decreased since 1999 (13 individual in 1999, and only 8 individual in 2001).

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#### (62) HUNTING AND CURRENT HABITAT OF THE TAPIR IN VOLCANO TENORIO NATIONAL PARK AND MIRAVALLES BUFFER ZONE, ARENAL, COSTA RICA

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The tapir (*Tapirus bairdii*) is the biggest mammal of Mesoamerica and its conservation is one of the main goals for the Arenal Conservation Unit (ACU), Research Strategy, Costa Rica. By means of this project, from Sept./1999 to Oct./2000, a GIS-quality habitat model was generated for the tapir; tapir's abundance (counting tracks method) and hunting areas (key actors survey) were assessed in the Volcano Tenorio National Park and Miravalles Buffer Zone. Slope, water bodies and forest existence, were the main variables determining tapir presence in the zone; these make ACU's habitat qualities to go from "important" until "very good"; low non-protected and protected zones were proper for the species. Tapirs prefer primary-high-forests and secondary-shrub-forests. In spite of no major habitat constraints according to our model, tapir population was low (Miravalles: 0.08, Tenorio: 0.27 tapirs/km<sup>2</sup>). Poaching had a main effect in current species presence. Besides poaching, habitat fragmentation and cattle fences (which restrict tapirs movements) contribute to explain those reduced population sizes. People used to make an instrument with its skin, and they also have traditional knowledge about tapirs. Main management guidelines included: monitory, adjust, evaluate and validate the model generated and educate to involve people, hunters truly in tapirs conservation.

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#### (63) WILD ANIMAL MANAGEMENT CENTER: A CONSERVATION EXAMPLE OF THE *Tapirus terrestris* IN THE ATLANTIC RAINFOREST OF SOUTHERN BAHIA, BRAZIL

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CEMAS is a Wild Animal Management Center located at Estação Veracruz, whose research studies subsidize management, conservation and recuperation programs of the Atlantic Forest fauna in Southern Bahia, Brazil. This station, which represents one of the last remnants of this ecosystem in Brazil, has 6,069

ha forest most of it being in a primary stage of conservation. Studies diagnose the problems related to fauna conservation at the station, for example the local extinction of various species and the reduction of population in others; surviving in small fragments of forest. Presently, CEMAS's activities are leading to the reproduction of the represented remnant species in captivity, that still present themselves at the station, like the species, *Tapirus terrestris*. The initial breeding source is composed of individual species originating in the region, apprehended by local environmental organizations or those born in captivity also originating from the Atlantic Forest. The individual species in captivity can be reintroduced into the forest fragments, which total more than 15,000 ha of Atlantic Forest and afterwards, will be monitored for reintroduction success. We hope that through the development of these programs, the natural population of will increase and affirm the conservation of this species in nature.

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#### (64) LOWLAND TAPIR (*Tapirus terrestris*) RANGING BEHAVIOR, HABITAT USE AND DIET IN SANTA CRUZ, BOLIVIA

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Tapirs were studied at a main site at Lago Caiman and at Perseverancia in northern Santa Cruz Department, Bolivia. Lago Caiman had five forest habitats: upland, tall, vine, Saltenejal, and Igapo. One tapir had a minimum convex polygon range of 16.4 km<sup>2</sup> containing at least one ca. 4-km<sup>2</sup> core area. Track encounter rates on 82 three-m diameter track plots (1816 plot checks) were used to examine habitat use. Overall no significant differences in track encounter rates between habitats were detected, but encounter rates were significantly different between seasons largely due to no track encounters in upland plots during the wet season. Of 28 telemetry locations for one tapir, 90% were in the uplands. Tapirs visited mineral licks every 11.5 hrs of nighttime observation. Visits (median 14.5 min.) to an undisturbed mineral lick were significantly longer than at licks where hunting had previously occurred (median 1 min.). Of 36 tapir sightings 86% were of individuals and 14% were of pairs. All pairs were observed in October or November suggesting early wet season breeding. The dry weight of tapir scats at Lago Caiman averaged 62% leaves, 16.8% fruit, and 21.2% fiber; and were significantly different from Perseverancia scats (41.6% leaves, 25.8% fruit and 32.6% fiber). Research results are contrasted with data from elsewhere in the species' range, and implications for tapir conservation and management are discussed.

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#### (65) WILD FAUNA ELECTRONIC REGISTER SYSTEM AND TAPIR'S SOUNDS ANALYSIS

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The tapir (*Tapirus terrestris*) is one of the most appealing sources of protein for the Amazonian settlers. The natural populations of this specie are now in danger due to the high pressure exerted by the local hunters. For this reason, the generation of basic information of the biology and ecology of these populations is necessary in order to improve the development of study parameters, specially the designing of methodologies that can lead to the management, monitoring and conservation of the specie. To meet this end a low-cost electronic system has been designed. This system was based on infrared and ultrasonic sensing. Information about presence, date, time, average speed and audio information was registered under a remote way. The system was applied in a saltlick at the of Yavilla river, 190 Km from Araracuara, department of Caqueta, Colombia. A pretty high average of entries of the saltlick was obtained, (24.9 probably because the place is located far from the rural sector) as well as the most attended times which were between 4-5 a.m. and 1-9 p.m. With the tapir's sound, a preliminary spectral estimation was done, obtaining as main results, a value for the central emission frequency (2756Hz), the behavior of its harmonic components (2nfc, n=1,2,3...) and its duration (149ms). With this information we aim to carry out useful electronic applications, in order to make census and local reconnaissance of the individuals, in areas where the presence of fauna is of great importance.

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