Progress Report II

2004-2005

Andean bear (*Tremarctos ornatus*) [1]

Evaluating the conservation status of the threatened Andean bear (*Tremarctos ornatus*) in Sierra de Portuguesa, Venezuelan Andes: Designing a management strategy.

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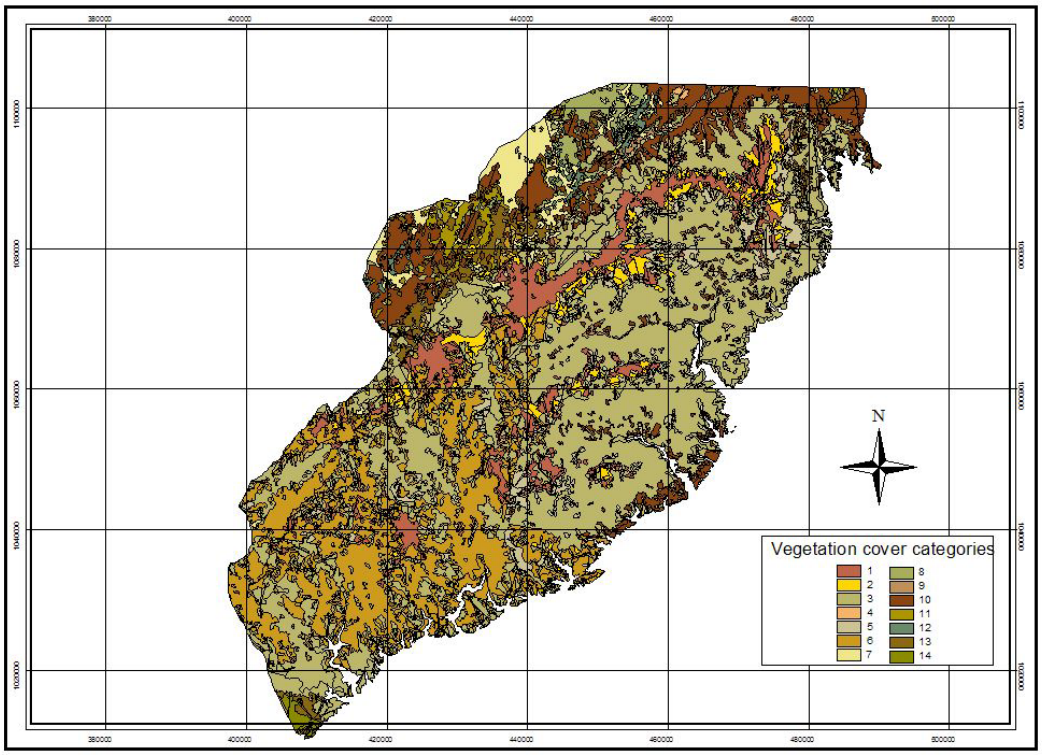
Vegetation Map and Andean bear habitat availability

Period: December 2004 – April 2005

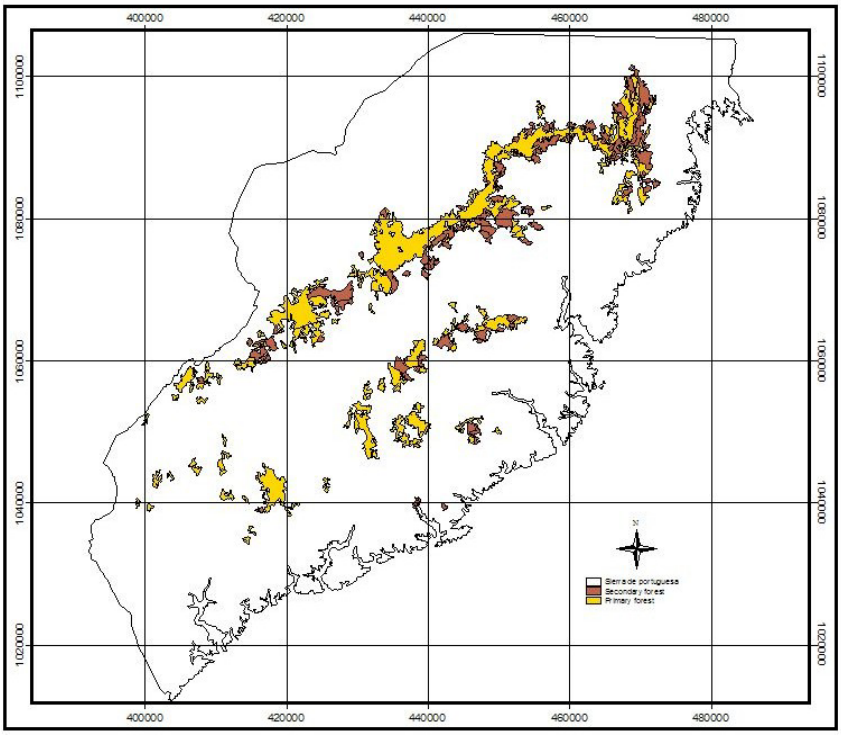
A set of 4 ETM^{+} and TM5 satellite images obtained from the Global Landcover Facility (GLFC), University of Maryland, were processed under a supervised classification (555 Ground Control Points, GCP) using Erdas 3.0, Idrisi32, ArcView GIS 3.2 and P.C. Arc 3.5.1. During the classification process BELCLASS was used as soft-classifier after which MAXBEL was applied as hardener (See Figure 1). A total of 14 vegetation cover categories where identified, five of which are related to Andean bear habitat: Primary forest, Secondary forest, Open-agriculture, shadow-coffee plantations. Map accuracy according to the ERRMAT algorithm on Idrisi32 was approximately 60%. Ground Control Point coverage needs to be extended across Sierra de Portuguesa to increase accuracy. This activity will be undertaken during the next field season.

Figure 1.- Vegetation map of Sierra de Portuguesa.



Once the vegetation map was obtained, an evaluation of Andean bear habitat availability was carried out, extracting from the GIS database only the Primary and Secondary forest categories (See Figure 2). Contour lines and precipitation were incorporated to the analysis. Results showed that bear habitat in Sierra de Portuguesa (43,000ha) corresponds only to 478ha, from which 7.45% represents Primary forest and 3.54% Secondary forest. Seven large patches of primary forest were identified and the evaluation of Andean bear presence was started during the next field-season.

Figure 2.- Andean bear habitat availability map in Sierra de Portuguesa.



Project visit by Dr David J. Chivers. Supervisor

PERIOD: APRIL 9TH-14TH 2005.

The Head of the Wildlife Research Group, University of Cambridge, PI's supervisor, and Lic Natalia Ceballos visited the study site to evaluate field-work overall development (See Figure 3). Activities undertaken included:

- Visit to the Parque Zoologico y Botanico Bararida: Andean bear exhibition.
- Visit to the Terepaima National Park (NP): Meeting with Regional Authorities of the National Institute of Parks.
- Visit to the Yacambú NP.
- Two field trips across the Ecological Corridor in search for Andean bear-signs.

Figure 3.- Dr David J. Chivers' visit to Sierra de Portuguesa: a) Dr David J. Chivers behind a palm eaten by the Andean bear. B) Dr David J. Chivers, Lic Natalia Ceballos, Eugenio Guzman Perez and Alfredo Freitez (Field-assistants).

Large scale survey planning

Period: June – August 2005

The large scale survey was planned to assess Andean bear distribution, habitat and landscape-use through bear-sign censuses [2-11]. Using the GIS database developed for Sierra de Portuguesa, a total of 100 non-permanent fixed-width transects (500x10m) with a truncated-distance sampling alternative, were selected following a stratified-random sampling approach that included both Primary and Secondary forest in Sierra de Portuguesa [8, 10]. A minimum distance of 800mt was chosen between transects to ensure independency, according to Paysley (2001). Half the transects were of to be surveyed during Wet season (Mayl to December) and the half on Dry season (December to May). A set of 200 GCP were also chosen randomly from the GIS to validate the Vegetation map.

Venezuelan Andean bear Action Plan Update

Period: June 14TH-16TH 2005

In a joint effort the Wildlife Research Group, University of Cambridge, Fundación para la Defensa de la Naturaleza (FUDENA), Universidad Simon Bolivar and Red Tremarctos sponsored by Larfarge-WWF Canada and the Houston Zoo-Fundación Andígena, carried out the workshop "Estrategias para la Conservacion del Oso Andino en Venezuela" to evaluate and update the Venezuelan Andean bear Action Plan (See Figure 4). The workshop brought together national and regional decision-making authorities, Andean bear experts, students and communities. A full-session on the species status across the country was held during the first day, and papers on the findings will be published shortly. The manuscript with the updated Action Plan is underdevelopment.

Figure 4.- Workshop “Estrategias para la Conservacion del Oso Andino en Venezuela”: a) Workshop atendees b) Atendees at the luch lounge.

Aging method, visibility profiles and error estimations

Period: August 2005

An undergraduate student from the Universidad Simón Bolívar carried out a Sign Aging Project in the locality of Cubiro.

The objectives of this project were to:

- Evaluate correspondence between aging categories within a type of sign.
- Determine time scale of aging categories within a type of signs.
- Establish equivalences between aging categories of different types of signs.

Over 200 signs including feeding, claw-marks, feaces, hair, tracks, day-beds were placed on non-disturbed and heavily disturbed primary forest (See Figure 6). Changes on aspect, color, smell, presence of parasites, re-growth was monitored every other day for a month, and once a month after that (See Figure 6). An aging scale is being developed from this activity and it is used during bear-sign censuses. Four field assistants, other than the ones hired during the Pilot Study, were trained on field methods and data collection techniques (See Figure 6).

Figure 6.- Sign Aging Project: a) PI and Anna Veit (undergraduate student) collecting bear hair at the Parque Zoologico y Botanico Bararida b) Bear claw-mark create for the sign aging project c) Anna Veit and Henry Sanchez (field-assistant) during field work d) Field team Henry Sanchez, Armando Valenzuela, Anna Veit, Eugenio Gusman Perez, Alfredo Freitez.

Error assessments and analysis of visibility between vegetation cover categories were undertaken, to estimate percentage of bear-signs missed during tracking. Results showed a consistent lost of 20% of signs on both vegetation cover categories included in the sampling. Thus, visibility appears not to be affecting differently sign encounter across vegetation cover categories. However, an in-depth analysis will be carried post-hoc with the data collected from the Large scale survey. Data loss is contemplated on the distance sampling procedure of analysis and it will allow assessing the accuracy of the fixed-width sampling method.

Period: September – December 2005

A total of 33 truncated-distance sampling transects (500x10m) have being conducted in search for bear-signs in three different areas of Sierra de Portuguesa (Terepaima NP, Ecological Corridor, Yacambú NP), together with vegetation plots (100x10m) for feeding resources availability estimations (See Table 1). A four-people team conducts systematic censuses inside transects recording well-known indicators of bear presence (See Figure 7) [2, 3, 5, 7, 11-14]. For each sign standard measurements are being recorded, including sign-age and rates of sign importance to overall bear ecology (See Figure 7). On each vegetation plot, tree-species density and fruit production is assessed by individual count and dbh measurements; palm-trees density is estimated through group or individual counts, and epiphytes abundance is obtained through a pre-defined scale.

GCP are recorded based on the sites chosen for bear-sign census. Data collected includes GPS measurement, altitude, main vegetation cover category and overall human disturbance.

Figure 7.- Field-work conducted for bear-sin censuses and resource availability estimations: a) Polo, PI, Eugenio Gusman Perez, Cruz Valenzuela, local farmer b) Palm eaten by an Andean bear c) Andean bear claw-mark d) Nerio Valenzuela, PI and Eugenio Gusman Perez.

Table1.- List of sites where truncated-distance sampling transects were undertaken. The vegetation cover category of each transects has being also specified.

September 2005		
Date	Site	Vegetation Cover category
7	La Florida. Yacambú NP.	Primary Forest
8	La Florida. Yacambú NP.	Primary Forest
10	Santo Domingo. Yacambú NP.	Primary Forest
12 - 13	La Pica del Padre. Yacambú NP.	Primary Forest
15	Potrerito. Yacambú NP.	Primary Forest
17	Altos del Viento. Yacambú NP.	Primary Forest
18 - 19	Pozo Azul. Yacambú NP.	Primary Forest
20	Caspito. Yacambú NP.	Secondary Forest
21	Caspo. Yacambú NP.	Secondary Forest
24	El Blanquito. Yacambú NP.	Secondary Forest
25	El Nuezal. Yacambú NP.	Secondary Forest
October 2005		
Date	Site	Vegetation Cover category
7	Qda. Agua Blanca. Terepaima NP.	Secondary Forest
8	Fila Los Potros. Terepaima NP.	Secondary Forest
11	Portachuelo.	Primary Forest
13	Qda. Abajo.	Primary Forest
15 - 16	San Esteban. Terepaima NP	Primary Forest
18	Cerro Negro. Terepaima NP.	Primary Forest
20	Piedra del Tigre. Terepaima NP.	Secondary Forest.
22	Los Rosas. Ecological Corridor.	Primary Forest
24	Riecito. Ecological Corridor.	Primary Forest.
Noviembre 2005		
Date	Site	Vegetation Cover category
17	El Páramo. Ecological Corridor.	Primary Forest
19	La Cruz del Nuezal. Ecological Corridor.	Primary Forest
20	El Rincon. Ecological Corridor.	Secondary Forest
22 - 24	Nuezalito.	Primary Forest
26	Bucaralito. Ecological Corridor.	Primary Forest
28	Palmichal. Ecological Corridor.	Secondary Forest.
December 2005		
Date	Site	Vegetation Cover category
4-8	Volcancito. Ecological Corridor	Primary Forest and Secondary Forest
10 - 11	Bombon. Ecological Corridor	Primary Forest and Secondary Forest

Project visit by Dr. David Augeri. Field Supervisor

Period: December 1st-7th 2005.

Dr. David Augeri, Coodinator of Conservation Biology at the Denver Zoological Foundation, visited the study site to evaluate field-work overall development and study design.

Activities undertaken included:

- Visit to the Parque Zoologico y Botanico Bararida: Andean bear exhibition.
- Visit to Yacambú NP.

- Visit to the Sign Aging Project.
- Two field trips across the Ecological Corridor to carry out two fixed-width transects on search for Andean bear-signs.

Dr. Augeri suggestions to improve data quality where the followings:
- Include forest edges, agriculture and dirt roads as categories to be sampled together with Primary and Secondary Forest.
- Increase sample size to incorporate 20% of replicates on each sampling category.

During the January some modifications will be done to the study design and schedule to include these suggestions.

Interviews

Period: September – December 2005

A Master thesis on Environmental Education from the Instituto Pedagógico de Caracas is being developed to establish local attitudes and believes of local hunters towards the Andean bear and its conservation, and to evaluate past and present hunting intensity. A close-ended questionnaire will be used for data collection and micros for community-radio stations regarding the species conservation will be developed. School teachers will be trained to conduct the interviews, as they are involved on workshops related to the species conservation. From December 17th to 19th, an exploratory visit was carried out by the PI and the graduate student to the sites of Sanare and Cubiro. Meetings with key personal were undertaken and the Pilot Study is under development.

Finances Report

ITEM	AMOUNT £
Field Staff Salary	500
Field equipment purchasing	500
Field expenses	700
Total	**1,700**

The amount remaining £ 2,300 will be spent during the next field season, to cover for the same items specified on this report.

Project Schedule 2006-2007

The following represents the schedule proposed for the up-coming two years when the project is expected to be finished.

2006												
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Large scale survey												
Interviews												
Analysis												
2007												
Analysis												
Dissertation												

OTHER GRANTS AWARDED

Source	Amount ($ US)	Date
The Denver Zoological Foundation	2,500	November 2005
The Denver Zoological Foundation	4,500	Pending
The International Bear Association (IBA)	3,500	Pending
Total	**9,500**	

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