A Range-Wide Survey to Determine the Current Distribution and Population Status of the Chacoan Peccary in the Paraguayan Chaco

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Abstract

The Chacoan Peccary was thought extinct until it was rediscovered as a living species in the Chaco region of Paraguay in the 1970s. At present, the region is going through an unprecedented wave of deforestation, with over 1000 hectares of forest cleared daily. Wild populations of the endangered Chacoan peccary are currently facing the fastest and most extensive habitat loss ever recorded in recent history. To better understand the current conservation status we carried out surveys and interviews throughout the species former range in the Chaco region of Paraguay. From gathered location data, an ecological niche model was created using the Maxent program, to create an updated distribution map. The model showed that most of the species former range remains the same. However, the central southern portion of its range has suffered intense land transformation, which has negatively affected the presence of the species. On the other hand, the northern portion of its range, consisting of national parks and private lands that still mostly remain undeveloped, currently has the highest probabilities of occurrence of Chacoan peccaries. Our survey offers vital information, giving us the ability to create an updated species distribution map for Paraguay. Helping identify habitat limits, boundaries and possible barriers as well as, specific sites that need immediate attention. Similarly, our interviews have provided important information that needs consideration when implementing conservation policies, management plans, or community work to raise awareness regarding the importance of conserving the Chacoan peccary and the rich Gran Chaco biodiversity.

Introduction

The existence of the Chacoan peccary (*Catagonus wagneri*), (Figure 1) was known only from fossil records (Rusconi 1930; Kraglievich and Rusconi 1931) until it was rediscovered alive in the Gran Chaco of Paraguay by Wetzel (1975). At present, due to the continuing decline in numbers and range size it is considered “Endangered” by the IUCN Red List Threatened Species (Altrichter et al 2015). In addition, it is listed as Appendix I CITES species and in Paraguay; it is listed as endangered and protected by Law (SEAM). The actual conservation status and distribution of the Chacoan peccary in the Chaco region of Paraguay is based on previous estimates made by Taber 1991, Handen et al 1994 and more recently by Neris et al 2002. However, current population numbers are still unknown.

The Chacoan Peccary or Taguá as the Guarani know it is the largest among the living species of peccary. It is endemic to the dry Chaco of northwestern Paraguay, Argentina and Bolivia (Wetzel 1977; Sowls 1984; Mayer and Wetzel 1986; Redford and Eisenberg 1992; Taber et al 1993;

Fig. 1: Two adult Chacoan peccaries (*Catagonus wagneri*).

Altrichter 2004; Neris et al 2002). It occurs in areas of low rainfall and high temperature and is restricted to the driest parts of the Gran Chaco biome (Sowls 1984, 1997). The prime habitat for the species is xerophytic thorn forest characterized by emergent trees a dense shrub with ground cover of bromeliads and cacti (Mayer and Brandt 1982). The primary food source of Chacoan peccaries are several species of cactuses, roots of bromeliads, fruit from various species of *Acacia* and *Prosopis*, and occasionally they browse on forbs (Mayer and Brandt 1982; Wetzel 1977; Sowls 1984; Taber et al. 1993; Neris et al 1993). Chacoan peccary are territorial and their home range sizes reaches 1,100 ha and contains a core area of about 600 ha in the Paraguayan Chaco (Taber et al. 1993).

The Paraguayan Chaco, home of the Chacoan peccary is a vast alluvial plain and one of the major wooded areas in central South America, bordered on the west by the Pilcomayo River and on the east by the Paraguay River. It is divided into three main ecoregions. The Low Chaco, a plain predisposed to flooding with precipitation generally >1000 mm\y (Redford et al. 1990; Mereles et al. 1992) characterized by palm forests with natural humid grasslands, and annually flooded savannas and swamps (Redford et al. 1990). The transitional Chaco with annual precipitation between 600 and 1000 mm\y and the High Chaco or semiarid Chaco with precipitation <600 mm/y (Adamoli et al 1990; Vargas-Gil et al 1988). Characterized by thick, xeric thorn forest (Holdridge 1969; Gorham 1973; Redford et al. 1990; Glatzle 1999) with abundant standing water during the rainy season (November to May) which diminishes greatly or disappears entirely during the dry season (July to September) (Hueck 1966; Eidt 1968). The uniquely harsh environment of the Paraguayan Chaco ecosystem has allowed it to remain mostly undeveloped and immune to modern anthropogenic land modification until 60 years ago, when deforestation began for farming and cattle production (SENACSA 2016).

Over the last four decades, pasture production in the Chaco region of Paraguay has steadily increased. Currently approximately 1000 ha of forest are cleared daily (Huang et al 2007, 2009; Caldas et al 2013). Since 2000, the region has lost nearly 3.5 M hectares of forest, predominantly to pasture for cattle production (Huang et al 2009; Caldas et al 2013). According to Caldas (2013), the Chaco public pressures and patterns of conversion have changed over the last decade. As well as, pattern of change in satellite imagery from 2011, showing changes that are so widespread that it is difficult to identify focal areas of deforestation as in previous times. With recently deforested areas appearing more square with deforested areas much larger and cleared over shorter period, suggesting that a change in technology used to remove the forest, from small-scale chain saws to bulldozers and other heavy machinery. The region now holds more than 6 millions of cattle and steadily continues to increase (SENACSA 2016). On the other hand, the Chaco also has approximately 15.000 km² of protected areas in public and private hands.

Despite this, most of these areas are merely big remnant forest that in the vast majority have little to no rangers, wildlife population estimates few active research and management programs and nearly all have no enforced control over illegal hunting (Figure 2). Nevertheless, these reserves and National parks are vital for the future of many species included the Chacoan peccary. Our goal for this work was to collect vital information through intense surveys and interviews to settlers, with the objective of acquiring data that allowed us to update the species distribution map for Paraguay. Identifying habitat limits, boundaries and possible barriers as well as, specific sites that need immediate attention regarding Chacoan peccary and the Gran Chaco biodiversity conservation.

Fig. 2: Hunted Chacoan peccary remains, skulls found on a Chaco public road with fresh tract from the family group still visiting the area.

Material and Methods

Survey area

We surveyed throughout most of the former Chacoan peccary distribution in search of remains, signs or direct observations on public and private roads and paths, from August 2012 to September 2013. We carried out 22 survey trips, traveling more than 15.000 km, covering an area of approximately 180.000 km² corresponding to the species estimated former distribution and beyond, which included the northern areas of the department of President Hayes, the entire department of Boquerón and Alto Paraguay (Figure 3). We obtained 56 new presence location records based on direct observation, tracks, body remains and trusted source of direct observation records (Table 1). To ensure that all the records were independent, and to minimize the effects of spatial autocorrelation on future modeling analyses, all account have a unique exact location recorded using a global positioning system (GPS) unit. Location records that were closer than 50 m were not included in the Niche Model analysis to compensate for biases in data that frequently occur when some areas in a landscape are sampled more intensively than others (Elith et al 2011).

Despite our intense survey due to the dense characteristics of the Chaco forest, it was extremely difficult to observe Chacoan peccaries in the forest, except on open road, old paths or forest edges. To overcome this we carried out interviews to local settler and workers in search of information on the occurrence of the species and hunting practices. We interviewed 72 individuals throughout the Chaco. It was clear that there were three very distinct types of settlers. Inhabitants of small settlements and Amerindians in which the great majority rely on day-to-day-subsistent hunting for their source of protein. On the other hand, settlers from well-established medium to large cattle ranches in which hunting is more opportunistic or in most cases prohibited by the owners. Finally, fence and wood post workers, in areas in which new ranches are beginning to be established, relying exclusively on wildlife for their everyday meat source.

Respondents were questioned in Spanish or Guaraní to prevent miss communication. The interviewed were asked to identify species through high-resolution color pictures and questioned according to their answers. If they identified the species correctly, we asked general questions about the species such as, if they considered the species to be common in the area, in what type of habitat and how long has it been since the last time they had seen or hunted one. We asked information about animal group size and if they considered the species to be more common now, or the same as in the past. In addition, we asked questions regarding what animals they hunt the most and how often they hunted.

Table 1. Detailed Chacoan peccary present locations collected during this work.

	Present locations.		Geografic locations		
	Department	Location area or name	Latitude	Longitude	found
	Alto Paraguay	4 de Mayo area	19,97902	60,67605	Tracks
1	Alto Paraguay	Kuarahy reta area	19,98491	60,64295	Tracks
2	Alto Paraguay	Lagerenza area	19,79799	60,86158	Tracks
3	Alto Paraguay	Lagerenzai area	19,72468	60,85325	Tracks
4	Alto Paraguay	Lagerenzai area	19,80022	60,86179	Skull
5	Alto Paraguay	Los Laureles Ranch	19,67344	60,91458	Alive
6	Alto Paraguay	Madrejón a Línea 1	19,68451	60,99142	Tracks
7	Alto Paraguay	North of Línea 1	19,99134	60,93618	Tracks
8	Alto Paraguay	North of Línea 1	20,06050	60,03827	Tracks
9	Alto Paraguay	Route Línea 1	20,15291	60,96729	Tracks
10	Alto Paraguay	Route Línea 1	19,98327	60,41700	Tracks
11	Alto Paraguay	Route Línea 1	19,98356	60,23691	Tracks
12	Alto Paraguay	Route Línea 1	19,88908	60,14323	Tracks
13	Alto Paraguay	Route to Sierra León	19,98384	59,97506	Skull
14	Alto Paraguay	Route to Sierra León	19,82543	59,75862	Skull
15	Alto Paraguay	Route to Sierra León	20,12361	59,75866	Alive
16	Alto Paraguay	San Alfredo area	19,61329	59,38155	Tracks
17	Alto Paraguay	San Alfredo area	20,40450	60,47423	Tracks
18	Boquerón	4 de Mayo	20,20132	60,53254	Tracks
19	Boquerón	Don Gerardo area	20,37670	60,53285	Tracks
20	Boquerón	Estancia Gran Siete area	20,59469	60,53800	Tracks
21	Boquerón	Estancia Mariposa area	21,37319	60,55966	Tracks
22	Boquerón	Estancia Samuhu	21,41221	60,55980	Tracks
23	Boquerón	Estancia Samuhu	22,55066	60,63195	Tracks
24	Boquerón	Estancia Tagua area	22,65468	61,99213	Tracks
25	Boquerón	Estancia Tagua area	22,24492	60,41774	Tracks
26	Boquerón	Estancia Tagua area	21,63255	59,93435	Tracks
27	Boquerón	Faro Moro Ranch	21,27788	61,33019	Alive
28	Boquerón	Faro Moro Ranch	22,66316	61,19254	Tracks
29	Boquerón	Laguna Negra Indian reserve	22,45938	60,53161	Alive
30	Boquerón	Pozo Hondo area	22,63776	61,48587	Tracks
31	Boquerón	Route Línea 22 area Pozo Hondo	22,10820	62,19321	Tracks
32	Boquerón	Route Línea 6	21,34575	61,12839	Skull
33	Boquerón	Route Línea 6	21,28278	61,26268	Tracks
34	Boquerón	Route Línea 6	21,19153	61,60089	Tracks
35	Boquerón	Route Línea 6 Leitekue area	21,89525	60,58403	Skin
36	Boquerón	Route Línea 6 Ovelarkue area	21,72407	60,09923	Skull
37	Boquerón	Route Michel	21,74642	59,96393	Tracks
38	Boquerón	Route to Estancia Santa Tereza	21,68926	61,27982	Tracks
39	Boquerón	Teniente Enciso National Park	22,00968	60,70704	Tracks
40	Boquerón	Toledo area	22,02186	60,90850	Alive
41	Boquerón	West of Mariscal Estigarribia	22,34725	60,32753	Skin
42	Boquerón	West of Mariscal Estigarribia	21,42168	59,82782	Tracks
43	Boquerón	Campo Loa area	21,26581	59,59841	Tracks
44	Presidente Hayes	Campo María reserve	22,57316	65,34563	Tracks
45	Presidente Hayes	Estancia Itakabo area	22,51209	59,07519	Tracks
46	Presidente Hayes	Estancia Itakabo area	22,96605	60,40754	Tracks
47	Presidente Hayes	Estancia Tomboli area	23,29832	60,47652	Tracks
48	Boquerón	Picada 108	21,15633	60,80202	Skull and skin
49	Boquerón	Picada 108	21,28287	61,10626	Alive
50	Boquerón	Picada 108	21,05196	60,38397	Tracks

Ecological Niche Modeling and Environmental Layers

Ecological niche modeling (Busby 1991; Stockwell and Peters 1999) uses the fundamental niche of a species (Hutchinson 1957) to determine suitable habitat and distribution of species by correlating occupancy and environmental data to predict the distribution of a species (Franklin 1995; Hirzel et al. 2002). Ecological niche modeling has been successfully used to predict the distributions of vectors, threatened plants and animals, as well as invasive species (Peterson 2001; Peterson and Vieglais 2001; Soberon & Peterson 2005; Graham et al. 2006; Monteiro de Barros et al. 2007; Costa et al. 2008, Ferraz et al 2016).

Predictive modeling of species distributions represents an important tool in biogeography, evolution and conservation (Peterson & Vieglais 2001). We used a maximum entropy algorithm implemented in the software Maxent 3.4.0. (Phillips et al. 2006). This program uses species presence records in combination with the distribution of environmental variables over the study area to estimate a probability distribution for species. The extent of occurrence for the species within the Chaco

Table 1 continued

51	Boquerón	Picada 108	21,40230	61,12360	Skin
52	Boquerón	Picada 108	21,19471	61,60688	Tracks
53	Boquerón	P. Smith data.	21,46546	60,55538	Alive
54	Boquerón	P. Smith data.	21,58082	85,40721	Alive
55	Boquerón	P. Smith data.	20,41684	59,53169	Alive
56	Boquerón	P. Smith data.	20,46535	59,53286	Alive

region of Paraguay was determined using newly recorded occurrence location points. Within the distribution limits of the study area, we used six environmental datasets. All environmental layers were resolved to a 1 km pixel resolution by using ArcGIS version 10.0. Datasets included vegetative land cover from historical images from 2010 (Land sat), soil type (FAO. UNESCO 1971), average annual precipitation (Gorham 1971), average annual temperature (The Food and Agriculture Organization of the United Nations 1964; Holdridge 1969) and altitude (D. S.G.M. 1998). To estimate our species distribution we considered that soil, altitude, rainfall and temperature are not likely to significantly change in short periods. For each model run, 25% of the occurrence records were set aside for external validation, and the maximum number of background points was set at 10.000. The occurrence records that were set aside for validation were chosen at random by Maxent. The remaining 75% of the records were used in the construction of the Maxent niche models. The area under the curve (AUC) of the receiver operating characteristic plot was used as a measure of model performance, and the outputs were projected onto a digital map, exported as an ASCII raster grid, and imported into ArcView 10.0 using the Spatial Analysis Extension for visualization and interpretation.

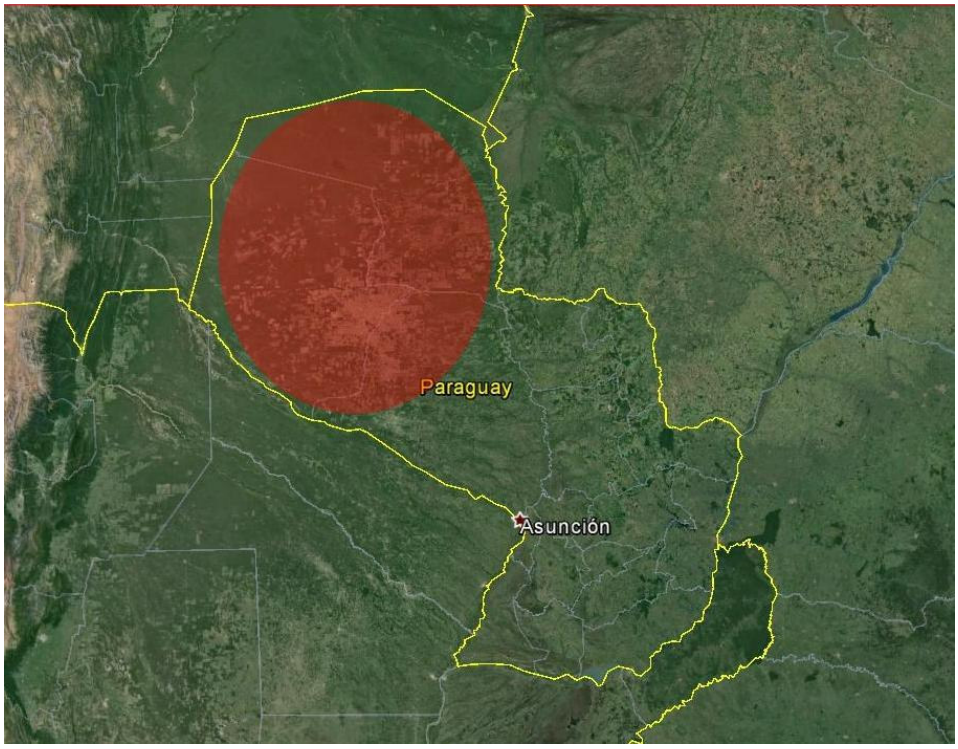

Fig. 3: Country of Paraguay. Red area shows survey area. In red circle darker green represents forest, light green represents cleared forest converted to grassland.

Results

Interviews Results

In total, we interviewed 72 individuals throughout the survey area. Though it may seem a low number, the area we surveyed is very sparsely populated. Interviewees were asked their origins, (44 %, n = 72) answered of being from the Chaco, and (56 %, n = 72) were not originally from the Chaco region. All interviewees were asked to identify species of peccaries from pictures and among them the Chacoan peccary, (30 %, n = 72) knew the species well and was able to identify it without doubt. At that time, all interviewees were asked several questions about hunting and their knowledge of Chaco wildlife. We asked those that identified the Chacoan peccary correctly,

if they see more Chacoan peccary now than years before, (89 %, n = 28) answered less now. Interviewees were asked where have they seen Chacoan peccaries, (57 %, n = 28) answered on roads, (25 %, n = 28) on forest edges, (11 %, n = 28) in the forest and (7 %, n = 28) on pastureland. Similarly, all interviewees were asked if they knew or heard that the Chacoan peccary is a protected species and that it is threatened of extinction, (53 %, n = 72) did not know that the species is threaten. We continued asking questions related to wildlife, such as if they actively hunt, (64 %, n = 72) answered yes. Asked how often do you hunt (56 %, n = 46) answered when the opportunity presents (28 %, n = 46) once a week and, (15 %, n = 46) answered every day. Asked what animal do you hunt the most, (52 %, n = 46) answered Deer (*Mazama gouazoubira*), (35 %, n = 46) peccarys (*Catagonus wagneri*), (*Tayassu pecari*) and (*Pecari tajacu*). (13 %, n = 46) birds like the Chaco Chachalaca (*Ortalis canicollis*), picazuro pigeon (*Patagioenas picazuro*) and small game like three-banded armadellos (*Tolypeutes matacus*), Chacoan mara (*Dolichotis salinicola*) and Tegu (*Tupinambis rufescens*).

Distribution Maps

Our ecological niche model created an updated distribution map based on new present Chacoan peccary locations (Figure 4). Of our six environmental layers used to model its distribution, soil type, average annual rainfall, and altitude were significant, single variable predictors. However, the best fitting models were obtained using all environmental layers. For our distribution map, the model predicted the presence of Chacoan peccary in an area of over 130.000 km² corresponding strongly to its previously estimated former distribution in Paraguay (Taber et al 1991) and by our recently published Gran Chaco distribution maps (Altrichter et al 2016; Ferraz et al 2016). However, our map is restricted to Paraguay, highlighting areas with high probabilities of occurrence in the northern Chaco. Which is not unexpected, considering that the northern Chaco region has yet seen little deforestation, it is still sparsely populated and holds the largest Chaco National Parks (Defensores del Chaco with 720.000 ha and Timane-Cabrea with 125.823 ha). In addition, it still holds large tracts of undeveloped privately owned native forest. On the other hand, the northwest of the Chaco is rated with low values in terms of probability of occurrence. This could be a result of the different habitat type in the area, characterized by very sandy soil and dunes with a much more open savanna type vegetation. However, it is important to mention that the Medanos National Park has 514.233 hectares located in that area, has very few roads covering the area. Consequently, our survey was restricted to those roads and due to the inaccessibility and the sandy soil; it was extremely difficult to find signs of the species. Because of this, we recommend that in the future more extensive studies should be conducted to better elucidate Chacoan peccary presence and population density in the area.

On the other hand, most of the central west Chaco that in the past was the region with the highest populations of Chacoan peccaries, currently has lower probabilities of occurrence, visibly associated with high habitat modification and fragmentation, accentuated by the fast development in the region. The map as well, identifies small pockets with high probabilities of occurrence distributed along the central and northwest of its range, probably as a direct effect of habitat fragmentation with consequently negative effects for the Chacoan peccary populations in those areas. As expected, the southern Chaco and areas near the Paraguay river predict very low occurrence probabilities. However, we did find animals that were outliers much further south than expected.

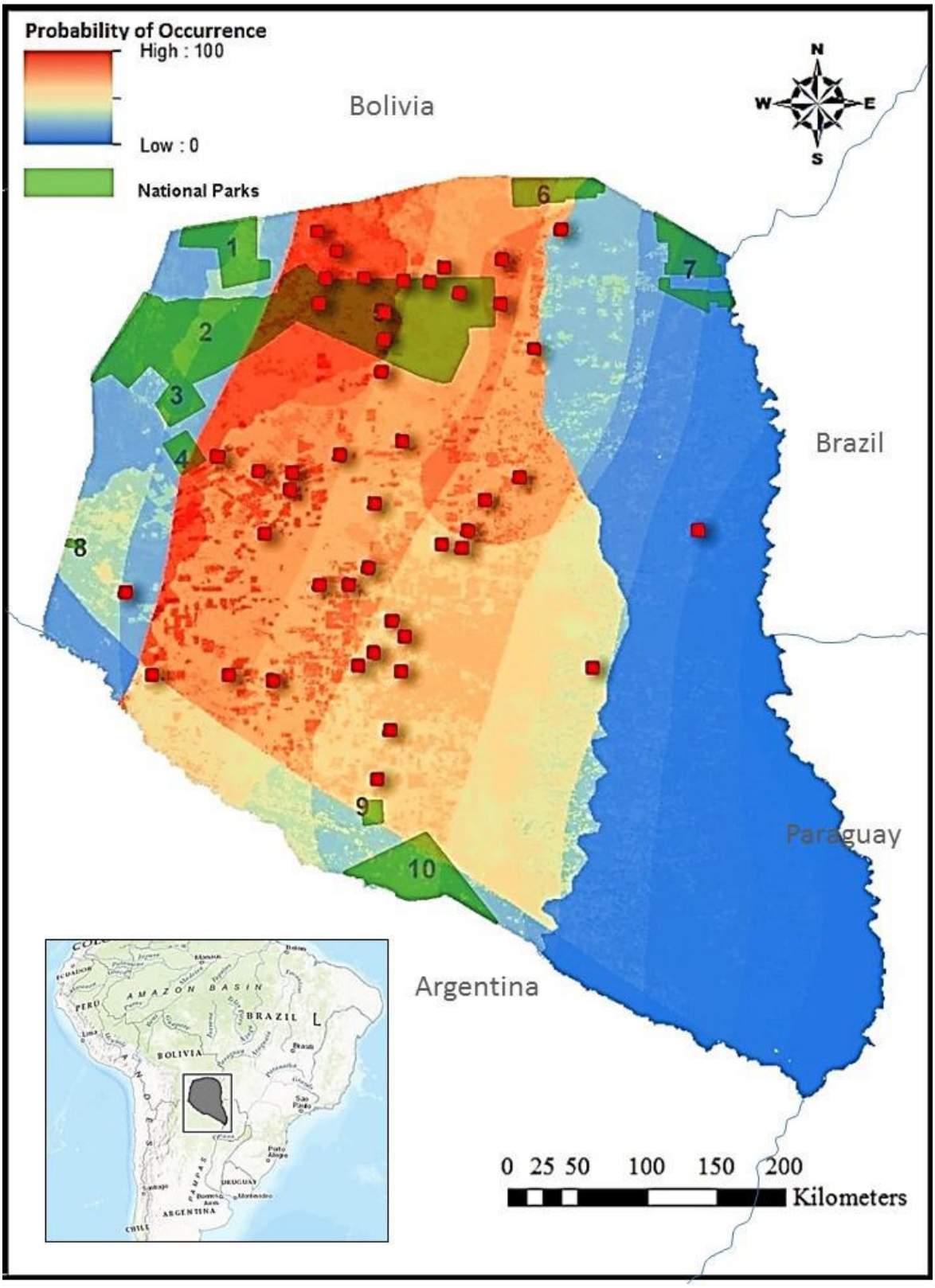

Fig. 4: Chacoan peccary distribution according to our Niche model results. Squares represent location points.

Discussion

Population Status

Throughout our survey, we sighted Chacoan peccary in five occasions, found six skulls, four skins, and registered 38 sites with clear tracts. Because of the size of its distribution range, the low detectability and the scarcity of the species, it is extremely difficult to acquire sufficient data to accurately estimate population numbers in the wild. However, based on estimate made by Taber (1991) and Handen (1994), the total population of Chacoan peccary was estimated to be in the order of 5000 individuals. Taking in consideration that more than twenty years has passed since those estimates and that the Chaco development has not stopped and furthermore, it has increased drastically in recent years. In one decade 3.5 Million hectares of Chaco forest have been cleared (Huang 2009, Caldas 2013), in its great majority ideal Chacoan peccary habitat. Considering the enormous habitat loose, hunting pressure, fragmentation and possible disease outbreaks, we can anticipate that the Chacoan peccary population in the Paraguayan Chaco consequently has had to be reduced to at least half of previous estimates. According to our maps, survey and interview results, it is a fact that surviving populations in the central and southwest Chaco are in clear decline, and most likely persist as small isolated and fragmented populations under heavy hunting pressure. On the other hand, our results strongly suggest that the northern Chaco, at present remains relatively isolated and so far holds the highest and healthiest population densities of Chacoan peccaries

Previous reports of herd sizes in the Paraguayan Chaco vary between one and nine (Mayer et al 1982; Sowls 1985), with an average of 4.5 according to Taber (1990, 1993, 1994). Our recent survey results based on direct observation, tracks and interviews suggest that heard size are much smaller now, with pairs and solitary animals being most common. Herds of more than five are at present very infrequent. Similarly, throughout the Chaco, populations appear to be fragmented and in a constant decline as a direct consequence of rapid and large-scale habitat loss.

Nearly all hunting in the Chaco occurs on roads due to the thickness of the Chaco forest, making it virtually impossible to move through it in search for prey. In recent years, Paraguay has started assembling Chinese motorcycles, making them available at very low cost. This has significantly increased the mobility of local settlers and greatly increased their hunting possibilities, by giving them fast and cheap transportation. In the recent past hunters moved mostly by walking, horseback or bicycles. At present, it is common to find hunters on motorcycles as far as 100 kilometers from their settlement. Likewise, old habits of leaving the fur and skull of hunted animal are disappearing, making it harder to find remains of hunted animals on the roads. It is evident that hunting pressure in areas surrounding human settlements, ranches and throughout most of the Chaco has increased. In addition, accompanying the expansion of cattle ranching and agriculture in the region are the opening of new roads and the improvement of old. Remote areas that had month traffic of a handful of truck now have several hundred. The majority of these trucks carry guns that are ready in case an unaware prey is spotted. Most common preys are mazama deer (*Mazama guazubira*), collar peccaries (*Pecari tayacu*), white-lipped peccaries (Tayassu pecari), tapirs (*Tapirus terrestris*) and the Chacoan peccary. Among all, the Chacoan peccary is probably one of the easiest preys, because of its careless and curious behavior (Altrichter and Boaglio 2004; Bellassai 2014). It is common for hunters to kill more than one

Chacoan peccary if the opportunity presents, taking advantage of the protective behavior the animal has toward fallen members of its family group (Sowls 1984).

If land conversion rates continue as in present, we expected that in the short future only protected National Parks, private reserves and legally conflicted lands would probably remain untouched. Also, it is likely that the entire region will resemble the Central Chaco, in which small islands of heavily exploited and degraded Chaco forest remain, surrounded by large grassland, agriculture fields and roads, harboring only a minimum percentages of the great diversity it once had (Areskoug 2001). Furthermore, if conservation programs and species management plans are not effectively implemented it is very likely that most medium and big mammals will be greatly diminished or locally extirpated and among them the Chacoan peccary (Decarre 2015).

It is also a fact that many species can take advantage of anthropogenic habitat transformation (Campos et al 2011). However, a greater number of forest specialized native species such as the Chacoan peccary are very sensitive to habitat damage. Yet, it is not impossible to carry out a rational and harmonic development taking in consideration not just profit but as well, the ecology balance preserving the habitat and its wildlife. It is important to promote cattle and agriculture practices that take in consideration and implement conservation measurements to reduce negative impacts toward wildlife. As many Chaco cattle ranchers have already and are strong advocates of wildlife in their land. Similarly, at present the Paraguayan government through, the Ministry of Environment (SEAM) is starting to implement the newly regulated Law for environmental services Law 3001/06 (SEAM), which requires landowners that have cleared more than what is legally allowed on Paraguay (75 percent) of their land to acquire certified forest stocks or to reforest. If this new law is correctly implemented it can give a significant monetary value to the Chaco forest, which in turn will reduce deforestation and promote long-term forest and wildlife conservation.

Conclusion

This project provides additional data to better understand the current distribution of the Chacoan peccary in the Chaco region of Paraguay, providing essential information that will help implement effective conservation and management strategies. As the recently updated and published Chacoan peccary action plan after the successful Catagonus wagneri conservation-planning workshop carried out on Feb 29th to March 3rd, in Asunción, Paraguay. (Altrichter el al 2016). Similarly, during the workshop a vortex population viability analysis model for the Chacoan peccary was created showing how critical the situation of the species in the Gran Chaco region (Leus et al 2016).

Estimating a species, distribution not only gives information on their occurrence but can identify habitat limits, boundaries and barriers as well as areas that hold populations that are vital for the survival of the species. Likewise, we have identified weakness in public communication concerning awareness about the Chacoan peccary critical conservation status and the importance of instructing the general public to identify the species throughout the Chaco region. In that regard we were aware that identification of the species is always confusing for the general public, in particular for the non-locals and non-hunters. To improve its identification and conservation posters were placed thorough our trips in local schools, military, police posts and local stores and in national parks (Figure 5).

Fig. 5: Poster created by the CCCI with support of the Rufford Foundation distributed throughout the survey area, to promote awareness of the critical conservation status of the Chacoan peccary.

With respect to efforts toward the conservation of the Chacoan peccary there is only one conservation project that is fully dedicated to the conservation of the species. Proyecto Taguá founded at the Chaco region of Paraguay in 1985 by the Zoological Society of San Diego, San Diego, California, USA. (Byrd et al 1988, Benirschke et al 1993). At present, the project has grown to become a non-for profit organization, named Centro Chaqueño para la Conservación e Investigación - Proyecto Taguá (CCCI). The CCCI is the only in-situ conservation and captive breeding effort for the Chacoan peccary in Paraguay. However, this effort is not sufficient to save the species. Currently wild populations of Chacoan peccaries are facing the fastest and most intense habitat loss in recent history. The fact is that development of the Chaco is unstoppable, strongly stimulated by high meat prices in the international market and the trend is that cattle ranching and production will keep increasing. If we do not take conservation steps to address this wave of progress with well-established development criteria and actions, we expose ourselves to an irreversible ecological damage as well as the high possibility of losing species like the Chacoan peccary. In fact, the measures and action plans to prevent the extinction of the Taguá and many other Chaco species have been already written many times. However, now is the time to take action, if we do not take the necessary steps the Chacoan peccary, symbol of the Gran Chaco will be ever closer to extinction.

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