

Suiform Soundings

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- Implementación de un programa de monitoreo del jaguar (*Panthera onca*), el ocelote (*Leopardus pardalis*), pecaríes de labio blanco y de collar y otros vertebrados terrestres mayores en el Parque Nacional Mirador-Río Azul, Petén, Guatemala utilizando cámaras remotas de detección
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- Estudio comparativo de salud de pecaríes (*Tayassu pecari* y *Tayassu tajacu*) on chanchos domésticos (*Sus scrofa*)

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Suiform Soundings

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Photo front page: Close encounter between a desert warthog and a cow in the center of Hulugho village (Garissa District, Kenya). Picture by Alexandre Caron (PACE Programme). Taken in August 2004, at the end of the dry season, when desert warthogs come - sometimes in large numbers - close to human settlements and compete with people and cattle for water.

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Editorial:

Let me start by wishing everyone a very happy 2006, hopefully with far less of the political nonsense that we have witnessed over the last few years, and with an improvement in the increasingly poor state of the natural and human environments and their biodiversity. It is worrying to see how short-sighted and narrow-minded many people are in the face of global changes in climate and environments. I really hope that this year will see some new brave and visionary leaders who can start to turn the tide of environmental degradation and lead our society in a new and more sustainable direction.

We, the people working with suids and hippos, may be able to make our own positive contribution. Even among fellow conservationists, very few realize the importance of pigs and hippos to human societies. They are major sources of pro-

tein for many and of far higher economic importance—as food source, ecosystem engineers, disease transmitters, unwanted ferals, or agricultural pests— than, for instance, giant pandas or orangutans. Our challenge is to show the world that if we manage pigs and hippos well, the conservation benefits for other species will be significant. I would dare to guess that among other mammal groups our species receive the least conservation funding relative to their economic importance. We therefore need to think hard on how we can promote our species in the conservation world. An analysis of the economic value of the entire species group would be a good start. Also, it would be a good idea to think of a better PR strategy for our species group. Please share your ideas on this in future issues of the newsletter.

Erik Meijaard, Samarinda, Indonesia

News from the *Sus verrucosus* program

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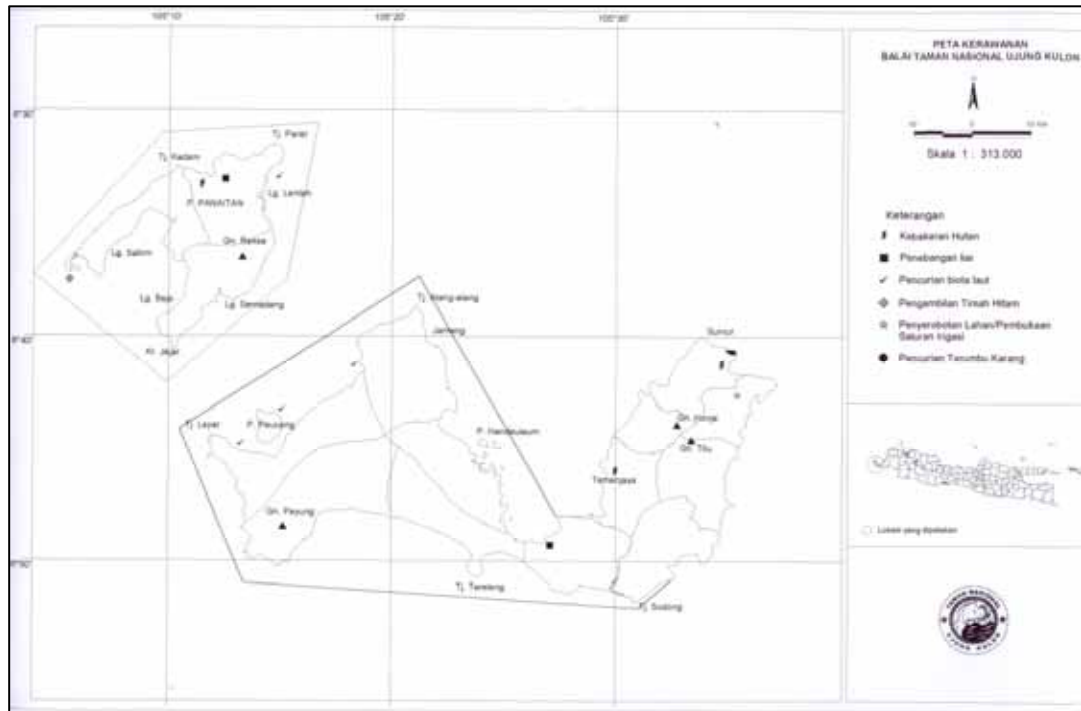
The Javan Warty Pig *Sus verrucosus* is an endangered pig species which only occurs on the Indonesian islands of Java and Bawean. We have recently finished a survey of the remaining population which indicated that the species has become very rare compared to previous surveys in the early 1980s. The main reasons for the decline appear to be over-hunting, loss of forest habitat, and possibly competition from the Eurasian Wild Boar *Sus scrofa*. The results of this survey will be published in the conservation journal *Oryx* in January 2006.

In spite of the precarious situation of the remaining wild populations the species is not protected in Indonesia and can be legally shot or poisoned. Furthermore, the species does not occur in any of the National Parks of Java. It is therefore unlikely that effective *in situ* conservation can be achieved in the short term. As an intermediate solution we

therefore want to focus on establishing secure captive populations to ensure that the species will not go extinct. A logical solution would be to strengthen the existing zoo populations. Three such populations exist: Jakarta, Surabaya, and Yogyakarta zoos. None of these, however, have had any reproductive success, while the genetic purity of some of these populations is questionable. We therefore decided that establishing a new (semi-)captive population would be a better option. The idea is to capture some animals from the wild and translocate these to an island offshore West Java. Once, this population starts to breed successfully, we intend to release pigs into the Ujung Kulon National Park where the species previously occurred, but has now become extinct.

With the financial help from the Foundation Zoos Help, GS and his team from the Indonesian Institute of Sciences (LIPI) recently conducted a feasi-

Map of Ujung Kulon National Park and Penaitan Islands, the intended location for the release project

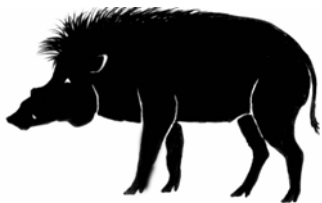


bility study to find out which island would be most suitable for our program. In addition, they discussed the *verrucosus* conservation program with Indonesian government representatives, including the head of Ujung Kulon National Park, and senior staff of the Directorate General for Nature. Generally, the government supports our conservation plans, although formal agreement for a go-ahead is still needed from the head of the Ujung Kulon National Park. EM is presently translating the Indonesian report on the feasibility study.

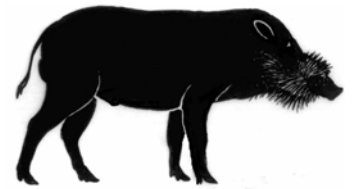
Our next step is to organize an international meeting to discuss the logistics of setting up the breeding project. We need technical input on capturing and transporting animals, feeding and housing them, optimal sex and age ratios, and other issues related to good animal husbandry. Also, we need to discuss funding and long-term financial sustainability of the program. We haven't yet decided on a date for this meeting, but it will very likely be held in February or March 2006. We are trying to match schedules of Indonesian officials, and overseas participants. The most likely venue is Bogor in West Java, and if possible, we would like to include a trip to Penaitan, the island with the highest potential for a release (see map). We will soon distribute a list with potential dates for this meeting.



Figure 1 (above). Leaflets produced by the Indonesian Institute of Sciences. These provide information on Javan Warty Pigs, ask people to report sightings, and explain the goals of the breeding project.



Papers and communications



A photographic guide to the differences between the Common Warthog (*Phacochoerus africanus*) and the Desert Warthog (*Ph. aethiopicus*)

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Introduction

The IUCN/SSC Pigs, Peccaries and Hippos Conservation Action Plan stressed the important gaps in our knowledge of *Phacochoerus aethiopicus* after the revelation of the existence of a "Somali Warthog", *Ph. aethiopicus delamerei*, a living representative of the Cape warthog, a taxon thought to be extinct since 1860 (Grubb & Oliver 1991; Grubb 1993). The Plan recommended a number of priorities for conservation action and for research, in view of clarifying the systematic and ecological relationships between *P. aethiopicus* and *P. africanus* (Vercammen & Mason 1993; d'Huart & Oliver 1993). These recommendations included an assessment of their conservation status, of their ecological requirements and of their interaction at the edge of their respective distributions, as this should provide the basis for appropriate management and it would allow to determining whether allopatry, sympatry or intergradation occurs in these areas.

In recent years, several initiatives have been taken to follow up on some of those recommendations. Some preliminary results have been published on the respective distribution and habitat of the two species in the Horn of Africa (d'Huart & Grubb 2001), and a mitochondrial DNA analysis has revealed the deep genetic divergence between them (Randi *et al.* 2002). However, specific field studies have yet to be undertaken on the behavior, ecology and habitat requirements of *P. aethiopicus*; although the Desert warthog is a species still virtually unknown at the present time, it may indeed prove to be one of the most specialized of all suids.

While several papers have described in detail the

differences between the skulls and teeth patterns of *P. aethiopicus* and *P. africanus* (see Grubb 1993 for a summary), no publication has yet illustrated them and reported the differences of external appearance between the two species. The differences between these two species that have lived side by side in vast areas (N Kenya, SE Ethiopia, Somalia) where a great deal of collection and scientific investigation took place in the last century, were rarely noticed in museum material and never noticed in the field. This suggests that no strikingly different features distinguished them in the field. However, the internet and contribution from a number of field investigators have now provided good photographic reference sources, allowing the comparison of large series of close-up pictures of these two species.

The aim of this short note is to offer a visual reference framework which can help field observers and scientists to easily distinguish Desert warthogs from Common warthogs, on the basis of a limited number of representative pictures. Two series of photographs are presented here: one illustrating the distinctive features of their skull and dentition, and a second allowing comparison of differences in their external morphology. The authors recognize that there may be additional permanent features that are specific of each species, but these would need further research. Other differences have been noticed, but they may be attributable to local variations or natural variability. The characteristic differences presented here are based on the morphology of adults (particularly adult males), and are the most prominent that should consistently be checked for identification.

The principal features of the Desert warthog, *P.*

aethiopicus, in comparison to the Common warthog, *P. africanus*, are:

1. Differences in cranial and dental features

o The skull is relatively smaller, but proportionately shorter and broader;

o **Thickened zygomatic arches:** the front part of the zygomatic arch is thickened by internal sinuses and swollen into a spherical hollow knob just in front of the jugal-squamosal suture (in the Common warthog, the zygomatic arch may be robust but it is never quite so thickened and there is no formation of a knob);

o **Enlarged sphenoidal pits:** In the Common warthog the skull roof behind the internal nares is marked by two deep and distinct “sphenoidal pits”, not found in any other African suid, while in the Desert species, these pits have expanded enormously, disappearing as distinct entities, so as to contribute to two vaults between the pterygoids, separated by a deep vomerine ridge.

Absence of incisors: there is never any trace of upper incisors, even in relatively young individuals, and the lower incisors, even if present, are rudimentary and non-functional, and reduced to 2 pairs maximum (whereas the Common warthog always has two upper incisors, though these may be lost in very old animals, and usually six functional lower incisors in the adult dentition of normal suine form);

2. Differences in external appearance

Several accounts of morphological differences in the external appearance of both species have been reported. Features like the paler color of the mane, lighter body size, or black markings on limbs, are not necessarily characteristic of the Desert warthog and do vary individually.

On the basis of numerous pictures taken in the field in many parts of their range, the following features seem to be the best permanent and distinctive identification criteria:

o **Hook-shaped genal warts:** in adult Desert warthogs, the genal (jugal) warts are always hook-shaped, whereas they are cone-shaped in the Common warthog. There is, however, a large variation in the volume and the form of these warts, as well as in their orientation.

o **Tip of ears bent backwards:** the tips of the ears in Desert warthogs are always bent backwards.

This feature gives the impression that the animals have rounded or blunt tips to their ears and that the contour of the ear is angular. In contrast, Common warthogs have pointed, leaf-shaped ears, with a sinuous contour;

o **Swollen suborbital areas:** the suborbital areas in Desert warthogs are swollen in the form of pouches that often extend to the base of the genal warts. These same areas in Common warthogs have never such a pronounced swelling;

Egg-shaped vs. Diabolo-shaped head: the comparatively broader skull of the Desert warthog and its shorter basi-occipital region give the impression that the head is more egg-shaped, whereas it looks more diabolo-shaped in the Common warthog.

In addition to the following photographs, these various features are also illustrated by the comparative pictures of Common and Desert warthogs from NE Kenya and Ogaden shown in Boy (2002), the excellent pictures of Desert warthogs by Alexandre Caron on the *Pigtrop* website (http://pigtrop.cirad.fr/fr/petits_curieux/SV_classification_Paethiopicus.htm), and the fine series of pictures of Common warthogs from Nairobi NP, published in Bradley (1972).

Acknowledgement

The authors would like to extend their heartfelt thanks to the following people who have kindly contributed to this study by gathering field observations and by providing pictures of skulls and/or of live animals. Tom Butynski, Alexandre Caron, David Cumming, Yvonne de Jong, Tom de Maar, Emmanuel de Mérode, Marion Hänsel, Daphne Hills, Paula Jenkins, Fanuel Kebede, Richard Kock, Marc Languy, Alain Laurent, Louise Leakey, Naomi Levin, Andrea Massarelli, Patricia Moehlman, Alastair Nelson, Martin Nicoll, Nicolas Prévot, Fraser Smith, Friedrich Wilhelmi, and Stuart Williams. Special thanks to Richard Kock, Alexandre Caron, Friedrich Wilhelmi and Stuart Williams who were the first to collect skulls and to provide large series of key pictures of desert warthogs in the course of their respective projects in N Kenya and SE Ethiopia.

References

- Boy, G. 2002: The Whole Hog. *Swara* **25**(1): 20-21.
- Bradley, R.M. 1972: A photographic ageing technique used on warthog. *E. Afr. Wildl. J.* **10**

(2): 123-128.

d'Huart, J.P. & Grubb, P. 2001: Distribution of the common warthog (*Phacochoerus africanus*) and the desert warthog (*P. aethiopicus*) in the Horn of Africa. *Afr. J. Ecol.*, **39**: 156-169.

d'Huart, J.P. & Oliver, W.L.R. 1993: Review of Priorities of Conservation Action and Future Research on Afrotropical Suids. In: *Pigs, Peccaries and Hippos. Status Survey and Conservation Action Plan* (Ed. W.L.R. Oliver). Pp. 101-106. IUCN/SSC, Gland, Switzerland.

Grubb, P. 1993: The Afrotropical Suids *Phacochoerus*, *Hylochoerus*, and *Potamochoerus*: taxonomy and description. In: *Pigs, Peccaries and Hippos. Status Survey and Conservation*

Action Plan (Ed. W.L.R. Oliver). Pp. 66-75. IUCN/SSC, Gland, Switzerland.

Grubb, P. & Oliver, W.L.R. 1991: A forgotten warthog. *Species* **17**: 61.

Randi, E., d'Huart, J.P., Lucchini, V. & Aman, R. 2002: Evidence of two genetically deeply divergent species of warthog *Phacochoerus africanus* and *P. aethiopicus* (Artiodactyla: Suiformes) in East Africa. *Mammalian Biology* (Z. Säugetierk.). **67**(2): 91-96.

Vercammen, P. & Mason, R. 1993: The Warthogs (*Phacochoerus africanus* and *P. aethiopicus*). In: *Pigs, Peccaries and Hippos. Status Survey and Conservation Action Plan* (Ed. W.L.R. Oliver). Pp. 75-84. IUCN/SSC, Gland, Switzerland.

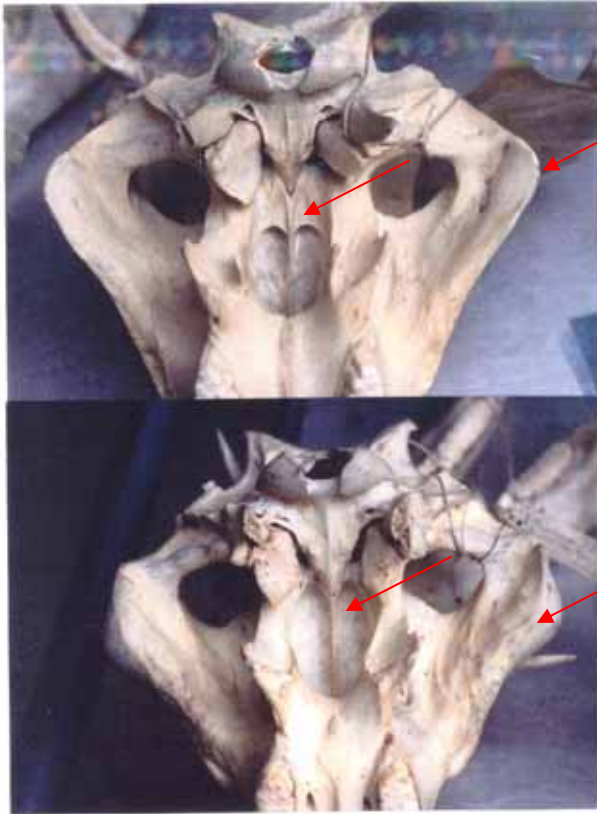
Craniological and dental differentiation between *Ph. africanus* and *Ph. aethiopicus*

All pictures by Peter Grubb

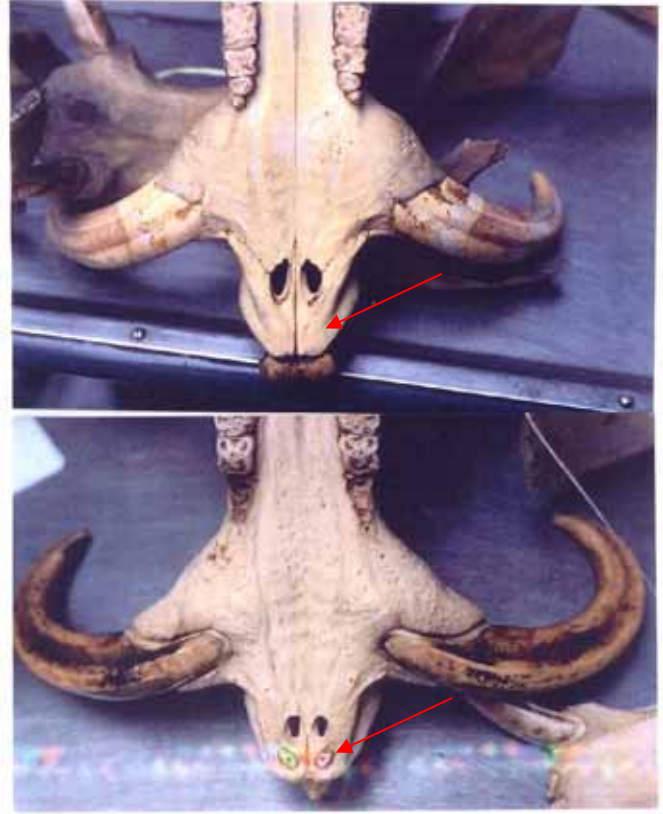
Skull upper side. **L:** *Ph. africanus* (BM 36.3.30.12); **R:** *Ph. aethiopicus* (BM 719V 81.5.11.2). Note: inflated zygomatic arches and straighter occipital ridge in *Ph. aethiopicus*



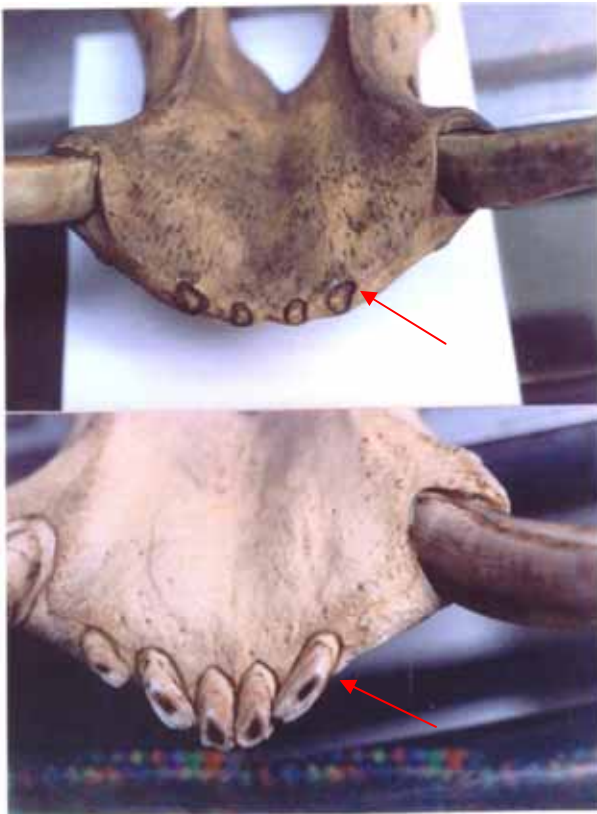
Skull lower side: **L:** *Ph. africanus* (BM 34.9.14.92); **R:** *Ph. aethiopicus* (BM collection number?). Note: inflated zygomatic arches and large "sphenoidal pits" in contact with auditory bullae in *Ph. aethiopicus*



Detail skull lower side: Top: *Ph. africanus* (BM 6.5.4.12); Bottom: *Ph. aethiopicus* (BM 12.7.28.1). Note: thickened zygomatic arches and larger "sphenoidal pits" in *Ph. aethiopicus*



Detail skull lower side: Top: *Ph. aethiopicus* (BM 50.8.24.25); Bottom: *Ph. africanus* (BM 36.3.30.12). Note: the pair of upper incisors are always absent in *Ph. aethiopicus*



Detail of mandible: Top: *Ph. aethiopicus* (BM 50.8.24.25); Bottom: *Ph. africanus* (BM 36.3.30.12). Note: *Ph. africanus* has usually 3 pairs of lower incisors; in *Ph. aethiopicus* lower incisors are absent, or vestigial and non-functional

3 Photos on the left: Desert warthog (*Phacochoerus aethiopicus*); 3 photos on the right: Common wart-hog (*Phacochoerus africanus*)



Karl Lehmann, Sam-
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PStuart Williams (IUCN Equid Specialist Group), between Wamba and Maralal, Kenya



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Estimating population size of wild boar (*Sus Scrofa*) using camera-trap data

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Based on a poster presented at the 9th Internal Mammal Congress, Sapporo, Japan, August 2005.

Introduction

The number and the distribution of wild boar (*Sus scrofa*) have increased, causing serious agricultural damage in Japan. Effective wildlife management requires information on population size. However, estimating population size of wild boar is difficult because wild boars are difficult to observe. We used the recently developed mark-resighting approach with automatic camera systems for estimating population size of wild boar.

Material and Methods

1. We trapped 18 wild boars and marked them



with ear tag from October 2003 to April 2004.

2. We resighted wild boars using photographs from TrailMaster® camera systems at six camera stations for 14 consecutive days in April 2004.

Sensitivity setting: The beam needs to be broken for 0.15 seconds to be counted as an Event.

Camera delay: 5 minutes

3. Mark-resighting data analyzed with Bowdens estimators. This estimator allows us to relax the assumption that all individuals in the population have the same probability of resighting.

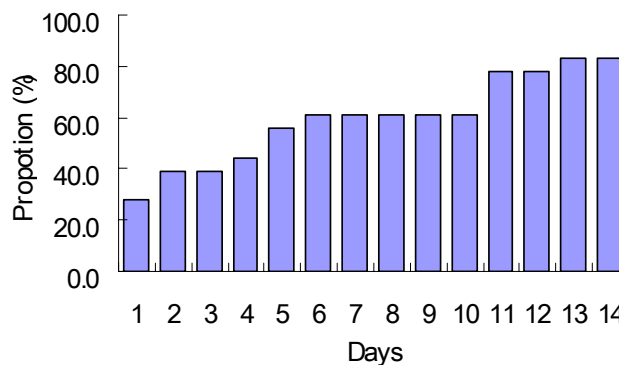


1. Proportion of photographs of wild boars

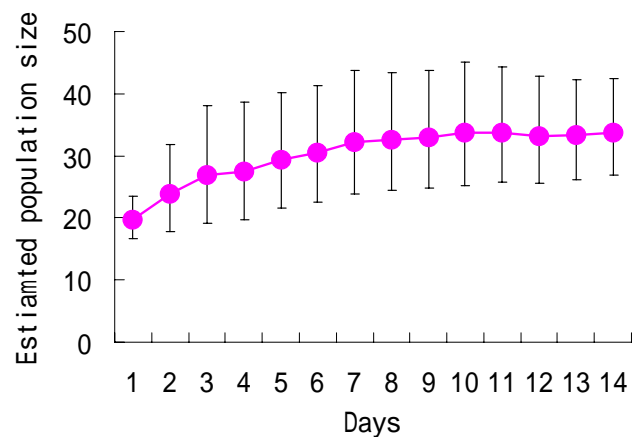
| Camera No. | Wild boar | Nothing | Crow | Raccoon dog | Total |
|--------------|-------------|------------|------------|-------------|-------------|
| C1 | 300 | 12 | 0 | 0 | 312 |
| C2 | 297 | 13 | 10 | 0 | 320 |
| C3 | 178 | 13 | 9 | 0 | 200 |
| C4 | 216 | 14 | 4 | 0 | 234 |
| C5 | 435 | 0 | 4 | 2 | 441 |
| C6 | 91 | 5 | 0 | 0 | 96 |
| Total | 1517 | 57 | 27 | 2 | 1603 |
| % | 94.6 | 3.6 | 1.7 | 0.1 | 100 |

94.6% of photographs were wild boars

2. Cumulative proportion of marked individuals resighted



| Days | Population Size | Variance | 95%CI |
|------|-----------------|----------|-------------|
| 1 | 19.6 | 2.7 | 16.7 - 23.4 |
| 2 | 23.8 | 10.8 | 17.8 - 31.8 |
| 3 | 27.0 | 19.5 | 19.0 - 38.0 |
| 4 | 27.5 | 19.3 | 19.6 - 38.5 |
| 5 | 29.4 | 19.0 | 21.5 - 40.1 |
| 6 | 30.5 | 19.1 | 22.5 - 41.2 |
| 7 | 32.3 | 21.7 | 23.7 - 43.7 |
| 8 | 32.6 | 19.5 | 24.4 - 43.3 |
| 9 | 32.9 | 19.8 | 24.7 - 43.7 |
| 10 | 33.7 | 21.6 | 25.1 - 45.0 |
| 11 | 33.8 | 19.1 | 25.7 - 44.4 |
| 12 | 33.1 | 16.5 | 25.5 - 42.8 |
| 13 | 33.3 | 14.1 | 26.2 - 42.2 |
| 14 | 33.7 | 13.5 | 26.8 - 42.4 |



33.7 boars by Day 14. Estimated population size of wild boar

Stabilization by Day 10

Summary

Wild boars accounted for 94.6% of all photographs.

2. Cumulative proportion of marked individuals resighted was 83.3% by Day14.

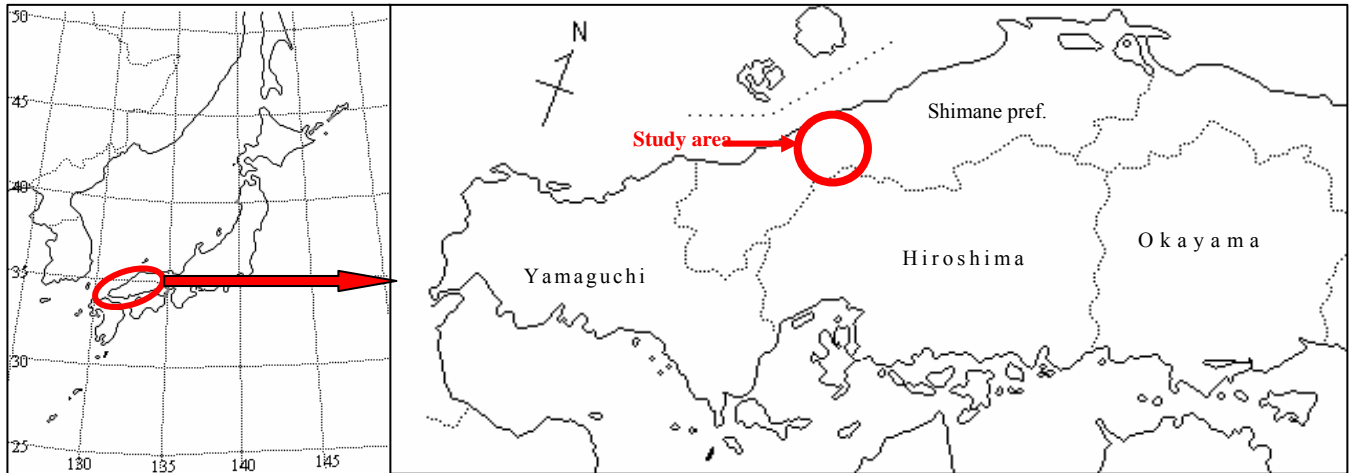
3. Estimated population size stabilized by Day 10.

4. Estimated population size based on 14 days data was 33.7 boars (95%CI 26.8-42.4).

Survival analysis of wild boars (*Sus scrofa*) in Iwami district, western Japan

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Introduction

In Japan, agricultural damage caused by wild boars (*Sus scrofa*) has been increasing rapidly in recent years. As a result, some prefecture offices made management plan for the species. Generally, in order to draw up the plan, it is necessary to get information about population parameter and density. However, there has been no wild boar management plan that internalized information about its density, because the way of density estimation is not established in Japan. Furthermore, little attention has been given to population parameter, because reproductivity of wild boar is high. Consequently management plan for wild boar disregards the influence of control on its population. This study is intended as an investigation of the population parameter of the specific.

Study area

This study was conducted in Iwami district, Shimane prefecture, western part of Japan. The annual rain fall was 1,471mm and the average temperature was 15.5 . This area included northwestern part of the Chugoku mountainous region, and the altitude ranged from 0 to 1,069m above sea level. 1,037 wild boars were killed between November 2002 and February 2003 (hunting season) in study area.

Photograph of wild boars hunted in study area

In study area, almost all wild boars were captured using by leg snare in hunting season. Some of them were gathered to the disemboweling-yard built by broker of wild boar meat. In the yard, wild boars were disemboweled and weighed before the cold-storage.

Material and Methods

This study was conducted in Iwami district, Shimane prefecture, western part of Japan. 167 wild boars (89 males and 78 females), which hunted using by leg snare between November 2002 and February 2003, were aged by tooth eruption and replacement method. The age of wild boar was classified as 5 groups: 7-8 months was , 19-20 was , 31-32 was , 43-44 was , and over 55 was . To test the hypothesis: the age structure of both sexes was equivalent and the sex ratios in sub-adult, adult, and all wild boars were 1:1, chi-square test was adopted. Both the survival function and the hazard function (mortality) of each sex were estimated by Kaplan-Meier method. To make a comparison of the survival functions between male and female, log-rank test was adopted.



Results

1 The number of the wild boar captured in the age group was very few (Fig. 1), because the leg snare could not capture the light weight animals.

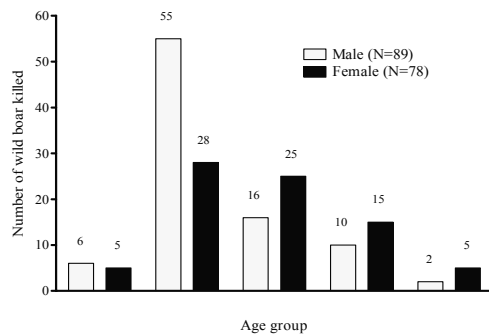


Fig. 1 Age structure of wild boar captured by leg snare between November 2002 and February 2003 in Iwami district, western part of Shimane prefecture. Numbers show sample size.

2 Age structures were significantly different by sex (Table 1, Chi-square test, $\chi^2=12.1779$, $p<0.01$) and a large number of male in the age group was captured (Fig. 1 and Table 1).

3 The sex ratio in all wild boars did not differ from the ratio 1:1 (Table 2, Chi-square test, $\chi^2=0.7246$, n.s.).

4 On the other hand the ratio in sub-adult and adult significantly differed from 1:1 (Table 2, Chi-square test, Sub-adult: $\chi^2=8.7831$, $p<0.01$, and Adult: $\chi^2=3.9589$, $p<0.05$).

5 The survival function of female was higher than male significantly (Fig. 2, Log-rank test, $\chi^2=7.864$, $p=0.005$).

6 The hazard function of female rose with the years (Fig. 3).

7 Concerning males, the hazard function between 1.5 and 2.5 years old was higher than between 2.5 and 3.5 years old (Fig. 3).

Table 2 Sex ratio of wild boar captured by leg snare between November 2002 and February 2003 in Iwami district, Shimane prefecture, western Japan.

| Age class | Number of catch | | χ^2 -test |
|-----------|-----------------|--------|----------------|
| | Male | Female | |
| Adult | 28 | 45 | $p<0.05$ |
| Sub-adult | 55 | 28 | $p<0.01$ |
| Total | 89 | 78 | n.s. |

Table 1 Age structure of wild boar captured by leg snare between November 2002 and February 2003 in Iwami district, Shimane prefecture, western Japan.

| Age group | Male | | Female | |
|----------------|----------|---------|--------|---------|
| | n | (%) | n | (%) |
| 0.5 | 6 | (6.7) | 5 | (6.4) |
| 1.5 | 55 | (61.8) | 28 | (35.9) |
| 2.5 | 16 | (18.0) | 25 | (32.1) |
| 3.5 | 10 | (11.2) | 15 | (19.2) |
| 4.5 | 2 | (2.2) | 5 | (6.4) |
| Total | 89 | (100.0) | 78 | (100.0) |
| χ^2 -test | $p<0.01$ | | | |

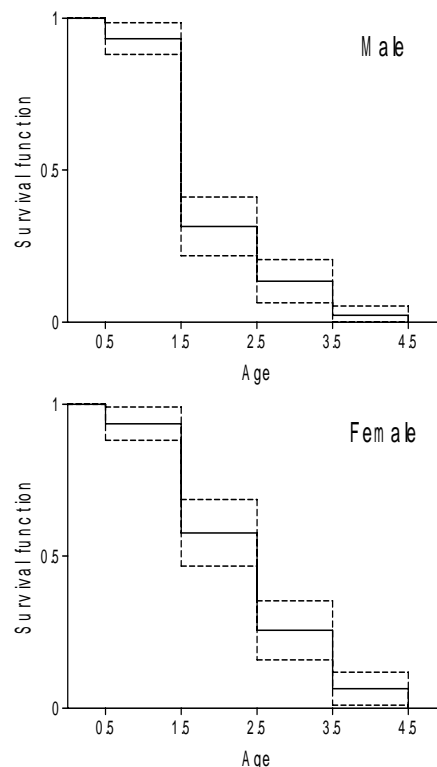


Fig. 2 The survival function of the wild boar captured by leg snare between November 2002 and February 2003 in Iwami district, western part of Shimane prefecture. Solid lines show the survival function and broken lines show 95% confidence interval.

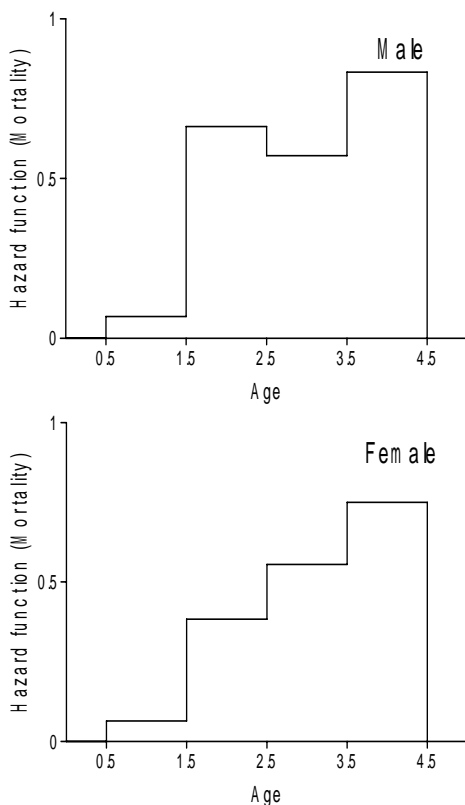


Fig. 3 The hazard function (mortality) of the wild boar captured by leg snare between November 2002 and February 2003 in Iwami district, western part of Shimane prefecture.

Conclusions

- 1 The hazard function and the captured number of male were raised in the age group . Male in this age group, which disperses long distance, may be captured mainly by leg snares.
- 2 Differences of age structures, sex ratios, and survival functions may result from high hunting pressure on male in the age group .
- 3 Although the hunting pressure may have a great influence on this population, there is a possibility of the population increase (cf. Fig 4).
- 4 If the hunting pressure on female or/and sub-adult male rises, it might deal a deathblow to this population.
- 5 To manage the wild boar population, this study is not enough. It is necessary to proceed with the investigation for years.
- 6 Although the Kaplan-Meier method solved the statistical problem to analyze the information about the population parameters, the ecological problem is still controversial. The sample size which reflects the wild boar population remains as a matter to be discussed further.

Occurrence of the collared peccary *Tayassu tajacu* (Linnaeus, 1758) in the Parque Estadual do Rio Doce, Minas Gerais, Brazil.

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Abstract

Information regarding species occurrence is vitally important in the conservation and management of species. In this study we present new information for this species based on photographic “captures”. Several photos of the collared peccary, *Tayassu tajacu* (Linnaeus, 1758) were obtained while conducting camera trapping for large to medium sized mammals in the Parque Estadual do Rio Doce (PERD). During a year of trapping (2408 trap days) we obtained 26 photos of which 18 were used to

calculate a relative abundance index for *T. tajacu* (RAI = 0.74). These records are important in determining the status and current distribution of this species in a fragmented landscape. No white-lipped peccary pictures were obtained suggesting local extinction. Also our results indicate the extreme importance that a protected area like the PERD plays in preserving important threatened species and wild populations.

Introduction

Fragmentation and anthropogenic pressures such as hunting are reducing the distribution area of many neotropical species (Cullen Jr, 1997; Chiarello, 2000). The collared peccary, *Tayassu tajacu* (Linnaeus, 1758) the smallest of the three peccary species, is considered to be an important prey species to many top predators as well as one of the most important games species in neotropical forests (Peres, 1996). Yet, although, *T. tajacu* appears to be more resilient, to hunting and fragmentation, than other peccary species (Peres, 1996), their numbers, nevertheless, have declined similar to many other species (Chiarello, 2000). Therefore it has become very important to adequately assess where and how many peccaries still occur throughout the fragmented patches of habitat that still remain in some parts of its original distribution.

It is important to note the influence that mammals have over a wide range of ecosystem processes. Frugivores and/or herbivores such as tapirs (*Tapirus terrestris*), deer (*Mazama* sp.), and peccaries (*Tayassu pecari* and *Tayassu tajacu*) as well as large sized rodents, play a vital role in maintaining the biodiversity of trees, by dispersing seeds and predating seeds and shoots (De Steven and Putz 1984, Dirzo and Miranda 1991, Olmos et al. 1999), to the extent that carnivores in turn regulate herbivore populations. (Emmons, 1987; Terborgh, 1988, 1990, 1992). Therefore the simplification of the environment, thru the loss of species, destabilizes the trophic dependence between organisms, causing some plant species to become rarer, and many animal species to be encountered in smaller numbers (Fonseca, 1985).

One method which is proving quite useful for inventorying and obtaining relative abundance indices of many medium to large terrestrial species is the use of camera-trapping (Voss & Emmons, 1996; Santos-Filho & Silva, 2002; Miranda & Tomas, 2003). In this study photographic "captures" of collared peccary were obtained during one year of periodic camera trapping as part of an on-going monitoring and assessment protocol of medium to large terrestrial mammals in the Parque Estadual do Rio Doce (PERD), the largest Atlantic

forest fragment (36,000 ha) in the state of Minas Gerais, Brazil.

Material and Methods

Study site

Camera trapping took place in the Parque Estadual do Rio Doce - PERD (19°48'18" - 19°29'24" S, 42°38'30" - 42°28'18" W) from February 2004 to March 2005. The vegetation of the park is considered tropical semi-deciduous with annual rainfall averaging 1480mm (Stalling, 1988). Although the park contains many hilly areas it is primarily a collection of interdispersed lakes and marshes.

Cameras

Camtrakker® "Ranger" and "Original" models were used (Camtrakker®, 2005). Both are equipped with a heat-in-motion sensor that triggers only when moving heat passes in front of the camera (i.e. an animal). Cameras were placed in a hexagonal grid minimizing the size of the uncovered area so that each camera was 1.5-3.3 km apart. Throughout the study a varying numbers of sites were trapped numbering from 1 – 20. At each site an attempt was made to place two cameras facing each other in order to reduce the possibility of losing information due to camera failure and to record both sides of each animal to enable individual identification when possible (Silver et al. 2004). Cameras were left in the field for a period of 60 continuous days. Each station was visited every 30 days to change batteries and film as necessary. Following the end of the 60 day period cameras were removed from the field and allowed to air dry change in an enclosed environment before being set in the field again.

Analysis

We have defined a detection unit as one photograph of a species per camera photo trap per day (24 hours). Therefore when more than one individual were registered in the same site and day we considered this events independent detection units. We were unable to individually separate collared peccary individuals, yet we did distinguish some detection units, classifying individu-

als into categories: adult, younger or mix group. The relative abundance index (RAI) for the collared peccary was calculated by summing up all detections for all camera traps during all the days the cameras were in the field, multiplied by 100, and then divided by the total number of trap days. A trap day being the equivalent of a 24 hour period each pair of cameras spent in the field (Sanderson, 2004).

Results

We obtained a total of 26 collared peccary pictures

during the study, a total of 2408 trap days. A greater number of “captures” was observed for the southern part of the park (Figure 1). Considering the detection units only 18 photographs could be used to estimate the relative abundance index (RAI). RAI indicated an abundance of 0.74 collared peccaries in the park. Analysis of the time registered for all collared peccary photographs indicates a diurnal pattern activity among 8:00am and 6:00pm (Figure 2).

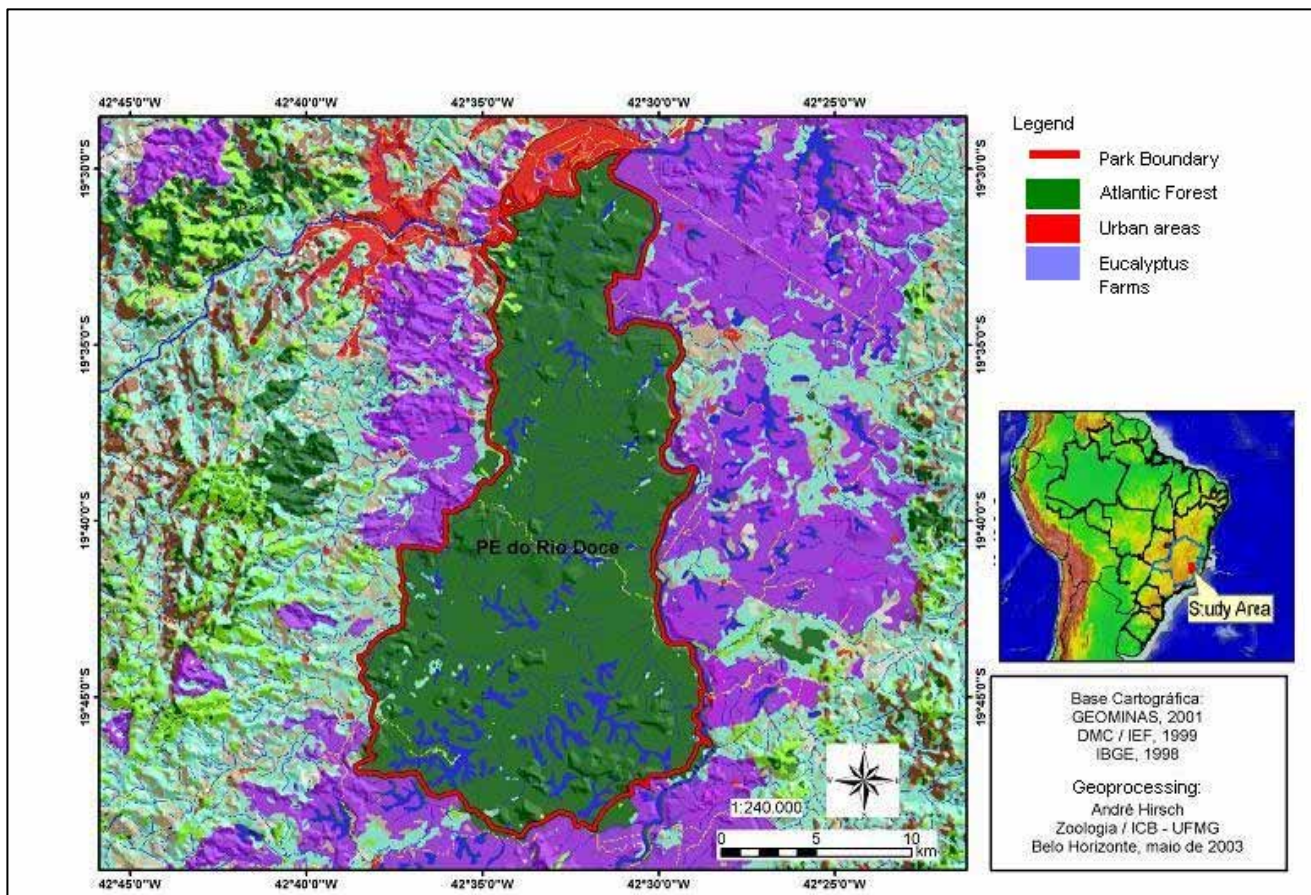


Figure 1. Map of Study site, Parque Estadual do Rio Doce (PERD).

Discussion

In the Minas Gerais Red Book of Threatened Fauna Species, no account is given of the collared peccary occurring in the PERD (Stallings et al. 1991, Costa 1998), although, 3 years later, in the management plan for the park, Fonseca (2001) alluded to the presence of this species. Thus, with what little is known about *T. tajacu* in the region and taking into account that *T. tajacu* is endangered within the state of Minas Gerais (Costa 1998) any new information

is very valuable towards its management and conservation. Compared to the larger-bodied, often sympatric, white-lipped peccary *Tayassu pecari* (Link 1795) the collared peccary appears to do better in hunted and fragmented areas (Altrichter and Boaglio 2004). This may explain the fact that we did not obtain one photo of the white-lipped peccary. Another possible reason may be that white-lipped peccary live in herds of 100 or more individuals, while collared peccaries live in groups of 14-50 (MacDonald,

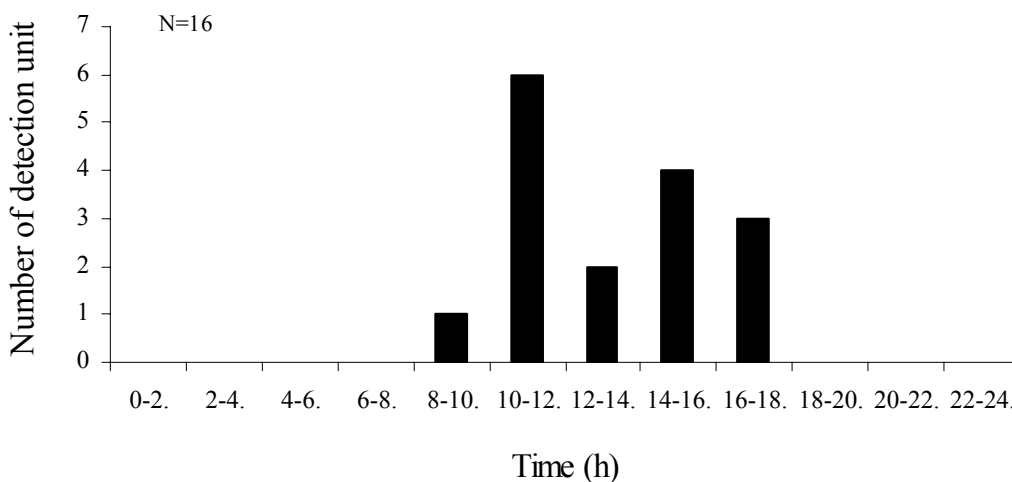


Figure 2. Peccary activity patterns in the Parque Estadual do Rio Doce (number of photographs of peccary per camera photo trap per day).

1984). This larger group size of white-lipped peccaries could effectively preclude this species from surviving in fragmented areas. It is important to note that even though the PERD is by all definitions a fragmented area it is still, at 36,000 ha, a rather sizeable continuous area. Nevertheless white-lipped peccaries were not recorded and the RAI for collared peccary was not very high. This low RAI would suggest that even though the collared peccaries are more capable of dealing with the anthropogenic effects of hunting and habitat fragmentation they may be reaching a critical point in the PERD.

Conclusion

Based on our results we suggest that future studies directed at the management and conservation of this important species be carried out within the park.

Acknowledgements

We thank the park manager Marcus Vinícius de Freitas and the Instituto Estadual de Florestas for the opportunity to conduct research in the park as well as for logistical support. We would also like to thank the Wildlife Conservation Society (WCS) for a grant given to (LRV) and the Conservation International's TEAM initiative for logistical and financial support. The Programa de Pos-graduação em Ecologia, Conservação e Manejo da Vida Silvestre (ECMVS) and the U.S. Fish and Wildlife Service.

Bibliography

- Altrichter, M.; Boaglio, G.I. 2004. Distribution and relative abundance of peccaries in the Argentine Chaco: associations with human factors. *Biological Conservation*, 116, p. 217-225.
- CamtrakkerÔ, 2005. Camtrakker. Available online (Accessed) June 30, 2005. < <http://www.camtrakker.com> >
- Costa, C.M.R. 1998. Pecari tajacu. In: Machado, A. B. M.; G.A.B. Fonseca, R. B.
- Machado, L. M. S. Aguiar, L.V. Lins (eds). Livro Vermelho das Espécies Ameaçadas de Extinção da Fauna de Minas Gerais. Belo Horizonte, Biodiversitas. p.494-569.
- da Fonseca, M.T. 2001. Considerações sobre a mastofauna do PERD Anexo 2 – In: Plano de Manejo do Parque Estadual do Rio Doce. Instituto Estadual de Florestas. (Accessed) June 30, 2005). < <http://www.ief.mg.gov.br> >.
- De Steven, D. & Putz, F. E. 1984. Impact of mammals on early recruitment of a tropical-canopy tree, *Dipteryx panamensis*, in Panama. *Oikos*, 43, p. 207-216.
- Dirzo, R. & Miranda, A. 1990. Contemporary Neotropical defaunation and the forest structure, function, and diversity - a sequel to John Terborgh. *Conservation Biology*, 4

p. 444-447.

- Emmons, L. H. 1987. Comparative feeding ecology of felids in a Neotropical rainforest. *Behavioral Ecological Society*, 20, p. 45-64.
- Fonseca, G. A. B. 1985. The vanishing Brazilian Atlantic Forest. *Biological Conservation*, 34, p. 17-34.
- Miranda, G. H. B. & Tomas, W. M. 2003. Métodos de Estudos em Biologia da Conservação e Manejo da Vida Silvestre. Uso de Equipamento fotográfico automático em levantamentos populacionais. Ed. UFPR.
- MacDonald, David (ed.) 1984. *The Encyclopedia of Mammals*. London, Andromeda. Oxford limited.
- Olmos, F.; Pardini, R.; Boulhosa, R. L.; Burgi, R. & Morsello, C. 1999. Do tapirs steal food from palm seed predators or give them a lift? *Biotropica*, 31, p. 375-379.
- Peres, Carlos. A. 1996. Population status of white-lipped *Tayassu pecari* and collared peccaries *T. tajacu* in hunted and un hunted Amazonian forests. *Biological Conservation*, 77, p.115-123.
- Sanderson, J.G. 2004. Tropical Ecology, Assessment and Monitoring initiative. Camera Photo-trapping Monitoring Protocol, TEAM Initiative. September 2004 Version 2.0 available online: <http://www.teaminitiative.org>
- Santos-Filho, M. & Silva, M. N. F. 2002. Uso de habitats por mamíferos em área de Cerrado do Brasil Central: um estudo com armadilhas fotográficas. *Zoociências*, 4, p. 57-73.
- Silver, S.C., Ostro, L.E., Marsh, L.K., Maffei, L., Noss, A. J., Kelly, M.J., Wallace, R.B., Gomex, H., Ayala, G. 2004. The use of camera traps for estimating jaguar (*Panthera onca*) abundance and density using capture/recapture analysis. *Oryx*, 38, p. 148-154.
- Stallings, J. 1988. Small mammal inventories in an eastern Brazilian park. *Bulletin of the Florida State Museum Biological Sciences*, 34, p. 159-200.
- Stallings, J. R.; Fonseca, G. A. B.; Pinto, L. P. S.; Aguiar, L. M. S.; Sábato, E. L. 1991. Mamíferos do Parque Estadual do Rio Doce, Minas Gerais, Brasil. *Revista Brasileira de Zoologia*, 7, p. 663-677.
- Terborgh, J. 1988. The big things that run the world - a sequel to E. O. Wilson. *Conservation Biology*, 2, p. 402-403.
- Terborgh, J. 1990. The role of felid predators in Neotropical forests. *Vida Silvestre Neotropical*, 2, p. 3-5.
- Terborgh, J. 1992. Maintenance of diversity in tropical forests. *Biotropica*, 24, p. 283-292.
- Voss, R. S. & Emmons, L. H. 1996. Mammalian diversity in Neotropical lowland rainforests: a preliminary assessment. *Bulletin of the American Museum of Natural History*, 230, p. 115.

The information below was taken from the following report: Panay Island: The Dwindling Forest and its Threatened Wildlife - an ethnobiological survey, by Marisol dG. Pedregosa. September 2005. North of England Zoological Society, Fauna & Flora International and Philippines Biodiversity Conservation Programme [Ed.].

Visayan Warty Pig, *Sus cebifrons*

Local names: *talunon* (Iloilo, Antique), *tamagonun* (Libacao in Aklan)

Central Panay Mountains: presence of *Sus cebifrons* was confirmed in Mt. Baloy, Makbak forest (Lambunao and Calinog in Iloilo and Valderrama in Iloilo), Mt. Madja-as (Libacao in Aklan, Culasi in Antique) and Mt. Nangtud (Barbaza in Antique).

North West Panay Mountains: the presence of *Sus cebifrons* in Pandan was verified through the several lower jaws kept as trophies by a local hunter; though there is some doubt about the genetic purity of these animals (W. Oliver, pers. comm.). Wild pigs are reported in Libertad, Nabas, Malay and Buruanga.

South West Panay Mountains: *Sus cebifrons* is reported in Mt. Poras and Mt. Banagon in Sibalom Natural Park, and in San Remigio area

South East Panay: local informants attested that wild pigs had not been seen in the Samponong Bolo or Bulabog Puti-an National Parks since the early 1980's and 1940's, respectively.

Gigantes Islands: wild pigs were reported by local informants to survive in small numbers, but were rarely encountered.

Guimaras Island: it was last seen in Guimaras island in the early 1940s.



Map. Confirmed and reported distribution of Visayan warty pig, *S. cebifrons*

Status: Locals reported that this species has hybridized with domesticated pigs that became feral. Locals identify hybrid young with white stripes over the usual black color of the wild pig. Hybrids were also reported from Culasi and Sebaste areas, and wild-caught animals seen in several private collections over the past 20 years were obviously hybrids; as evinced by the relatively large ears, short snouts and legs, sway backs and bellies; even piebald markings (W. Oliver, pers. comm.).

Wild pigs are widely regarded as pests because of their predations on root crops (e.g. taro, sweet potato, cassava) planted in kaingin areas; i.e. in forest clearings or peripheral to still-forested areas); and are this often killed on sight (e.g. via .22 calibre guns, locally referred to as ‘*de bomba*’) or fall prey to snares (‘*si-od*’) or pit-fall traps ‘*palukso*’) set up around the edges of these fields.



Figures 1 and 2. Adult female pure-bred Visayan warty pig (left) and hybrid (right); both wild-born in Central Panay Mountains. Photos courtesy W. Oliver, FFI-Philippines.

Selective hunting of wild pigs is also said to be “rampant” in Central Panay and in the North-west Panay Mountains Natural Park. It is doubtful if this could be described as ‘subsistence hunting’, as ‘wild pork’ generally commands much higher prices though domestic pork and is often sold in village markets, though it also an alternative source of protein to many upland dwellers, and often constitutes a important part of traditional food culinary preparations during weddings and fiestas. Figures 3 and 4 show some of the evidence for this.



Figures 3 and 4. Hunter with live warty pig brought to village market for butchering (left) and lower mandible (hunting trophy) from Pandan, Antique Province.

Here we provide descriptions of some current peccary projects in Latin America. In issue 5(2), more such project descriptions will be published.

Peccary Project Descriptions (in Spanish and Portuguese)

Development of exploitation systems for the sustainable exploitation of the collared peccary in Latin America—5 sub projects

Sub-projeto 1: Determinação de técnicas para propiciar bem-estar e reduzir a agressividade e o estresse em caititus (*Tayassu tajacu*) mantidos em cativeiro.

Local de execução: Laboratório de Etologia Aplicada, Departamento de Ciências Biológicas, Universidade Estadual de Santa Cruz, rod. Ilhéus – Itabuna, km16 Salobrinho, Ilhéus – BA, Brasil CEP 45650000.

Participantes: Dra. Selene Siqueira da Cunha Nogueira (coordenadora principal Sub-projeto 1); Dr. Sérgio Luiz Gama Nogueira (colaborador); Msc. Taís Marcele Tripodi Pereira (bolsista CAPES): dissertação intitulada “Efeitos da Densidade Populacional e da Distribuição de Alimentos nas Relações Sociais de Caititus (*Tayassu tajacu*) em Cativeiro” (data da defesa 28/03/2005); Melissa Gogliath Silva (bolsista FAPESB - aluna de mestrado PPG Zoologia-UESC): dissertação intitulada “Determinação da Densidade Populacional para a produção de Caititu (*Tayassu tajacu*) em cativeiro” (em andamento); Raquel Sá Veloso (IC bolsista FAPESB): iniciação científica: “Estudo das relações Materno-filiais de Caititus (*Tayassu tajacu*) criados em Cativeiro”. (finalizada em 08/2004); Rafael Santiago Machado (IC CNPq): iniciação científica: “Análise do comportamento de caititus (*Tayassu tajacu*) sob o uso de rádio colares” (em andamento); Raquel Rybarczyk Gomes Munhoz (aluna de mestrado PPG Zoologia-UESC): dissertação intitulada “Efeitos de Drogas Neurolépticas (palmitato de pipothiazina e acepromazina) como Atenuadoras de Estresse de Caititus (*Tayassu tajacu*)”. (em andamento).

Objetivos: O principal objetivo do sub-projeto 1 é desenvolver técnicas de manejo para a pro-

dução zootécnica de caititus em semi-cativeiro, que proporcionem condições que favoreçam o bem-estar animal e avaliar técnicas que minimizem o estresse do cativeiro. Para tanto estão sendo desenvolvidos estudos comportamentais que têm analisado a organização social de caititus, a densidade mais adequada para a produção desses animais, a quantidade de comedouros e abrigos necessários para sua manutenção, o uso de drogas neurolépticas para o manejo e transporte de animais.

Metodologia: Os projetos estão sendo desenvolvidos com 27 caititus mantidos em três grupos de nove animais sob três densidades diferentes (160m²/animal (D1), 80m²/animal (D2) e 52m²/animal (D3)). Através da metodologia de observação tudo para todos (Altmann, 1974) foram coletadas as interações sociais amigáveis e agonísticas entre os indivíduos dos grupos e através do método de amostragem de varredura foram analisadas a distância entre os indivíduos do grupo.

Período de Estudo: 12/2002-12/2005.

Resultados Esperados: Estabelecer a melhor densidade para a criação de caititus em cativeiro, identificar indicadores de estresse, avaliar atenuadores de estresse, determinar técnicas para diagnosticar o estresse através de métodos não invasivos.

Área de estudo: Fazenda Experimental do Almada da Universidade Estadual de Santa Cruz, Ilhéus, BA.

Agências Financiadoras: Comissão Européia (projeto INCO- pecari), FAPESB, CAPES, CNPq.

Problemas encontrados: dificuldade em adquirir mão de obra de nível básico e de apoio técnico.

Necessidade de estagiários: Este projeto conta com alunos de iniciação científica e alunos de mestrado e sempre estamos abertos a oferecer estágios não remunerados a alunos de outras instituições que desejarem desenvolver atividades na área de etologia.



Collared peccaries. Photo by WCS Bolivia

Sub-projeto 2: Estabelecimento de dietas para caititus (*Tayassu tajacu*) a partir de subprodutos agrícolas.

Local de execução: Laboratório de Animais Silvestres, Departamento de Ciências Agrárias e Ambientais, Estação Experimental do Almada, Universidade Estadual de Santa Cruz, rod. Ilhéus – Uruçuca, Ilhéus – BA, Brasil CEP 45650000

Participantes: Dr. Sérgio Luiz Gama Nogueira (coordenador); Ms Dimas de Oliveira Santos: dissertação intitulada “Avaliação da criação comercial de caititus (*Tayassu tajacu*) como alternativa para região cacauceira” (data da defesa 02/2004).

Objetivo: O principal objetivo do sub-projeto 2 é desenvolver uma dieta para caititus com ingredientes disponíveis regionalmente que serão testadas a fim de avaliar o desempenho zootécnico dos animais.

Metodologia: teste de digestibilidade in vivo de cinco alimentos padrões que foram fornecidos a cinco caititus mantidos individualmente em gaiolas metabólicas. Amostras destes alimentos foram encaminhadas ao laboratório de nutrição animal da EMBRAPA-Faz. Canchim com objetivo de determinar os níveis de digestibilidade in vitro destes mesmos alimentos de outros 15. Com os dados comparativos de digestibilidade in vitro e in vivo foram estabelecidas curvas de regressão e a partir das equações estimadas as digestibilidades dos demais ingredientes analisados. Com estes resultados e dados sobre as exigências nutricionais de caititus estabelecidas em estudos anteriores, foram estabelecidas rações experimentais que estão

sendo fornecidas aos caititus para avaliar o consumo alimentar, conversão alimentar, ganho de peso e número de filhotes produzidos por fêmea ao ano.

Período de Estudo: 12/2002-12/2005.

Resultados Esperados: Estabelecer rações balanceadas de baixo custo que viabilizem economicamente a criação em cativeiro de caititus.

Área de estudo: Fazenda Experimental do Almada da Universidade Estadual de Santa Cruz, Ilhéus, BA.

Agências Financiadoras: Comissão Européia (projeto INCO- pecari), CNPq.

Problemas encontrados: adaptação dos animais às gaiolas levou à necessidade de obtenção dos dados em baias adaptadas.

Necessidade de estagiários: Este projeto está em fase final de execução. Novas atividades, contudo, estão previstas na área de nutrição animal e que necessitarão do auxílio de novos participantes (alunos de graduação e de mestrado).

Sub-projeto 3: Determinação do papel de caititus (*Tayassu tajacu*) como predador ou dispersor de sementes de frutos tropicais.

Local de execução: Laboratório de Animais Silvestres, Departamento de Ciências Agrárias e Ambientais, Estação Experimental do Almada, Universidade Estadual de Santa Cruz, rod. Ilhéus – Uruçuca, Ilhéus – BA, Brasil CEP 45650000.

Participantes: Dr. Sérgio Luiz Gama Nogueira (coordenador); Tatiana Senra Motta (Bolsista CAPES - aluna de mestrado PPG Zoologia-UESC (data prevista para defesa 6/2005).

Objetivo: O principal objetivo do sub-projeto 3 é estabelecer o papel dos caititus como predador ou dispersor de sementes de frutos tropicais e com isto estabelecer as consequências da ausência desta espécie em determinada região ou da sua abundância.

Metodologia: Frutos de 10 espécies nativas ou subespontâneas, que ocorrem na região sul da Bahia foram fornecidas durante três dias consecutivos a seis caititus mantidos em baias individuais. As sementes intactas coletadas nas fezes foram quantificadas e colocadas para germinar, sendo comparadas com a germinação de sementes que não passaram pelo trato digestório de caititus.

Período de Estudo: 12/2003-7/2005.

Resultados Esperados: Estabelecer o real papel de caititus em florestas tropicais e as consequências da ausência de seu manejo (eliminação de excedentes).

Área de estudo: Fazenda Experimental do Almada da Universidade Estadual de Santa Cruz, Ilhéus, BA.

Agências Financiadoras: Comissão Européia (projeto INCO- pecari), CNPq.

Problemas encontrados: contaminação por fungos de algumas sementes no teste de germinação.

Necessidade de estagiários: Este projeto está em fase final de execução, contudo novas atividades estão previstas na área de relações entre caititus e plantas no sul da Bahia e que necessitarão do auxílio de novos participantes (alunos de graduação e de mestrado).

Sub-Projeto 4: Determinação dos alimentos consumidos por caititus (*Tayassu tajacu*) no sul da Bahia.

Participantes: Dr. Sérgio Luiz Gama Nogueira (coordenador); Carlos Alberto Batista Santos – aluno de mestrado PPG Zoologia-UESC (data prevista para defesa 3/2006).

Objetivo: O principal objetivo deste projeto é o de determinar os alimentos chave e limitantes para caititus no sul da Bahia.

Metodologia: fazendas da região cacauera do sul da Bahia estão sendo monitoradas para avaliar os alimentos consumidos por caititus através da utilização de armadilhas de rastros e, paralelamente, está sendo feita a fenologia de diversas espécies de frutíferas potencialmente utilizadas por esta espécie.

Período de Estudo: 3/2004- 3/2006.

Resultados Esperados: Estabelecer os principais alimentos consumidos por caititus na região cacauera da Bahia.

Área de estudo: Fazenda Almada, Fazenda Serra do Teimoso, Propriedades do entorno do Parque Estadual da Serra do Conduru.

Agências Financiadoras: Comissão Européia (projeto INCO- pecari).

Problemas encontrados: dificuldades para acesso às propriedades na época das chuvas e na identificação das espécies causadoras de danos.

Sub-Projeto 5: Controle de danos provocados por caititus (*Tayassu tajacu*) a cultivos agrícolas no sul da Bahia.

Participantes: Dr. Sérgio Luiz Gama Nogueira (coordenador); Érico de Sá Petit Lobão – (Bolsista FAPESB - aluno de mestrado PPG Zoologia-UESC) (data prevista para defesa 3/2006).

Objetivo: O principal objetivo deste projeto é quantificar os danos provocados por caititus a cultivos agrícolas de subsistência no sul da Bahia e determinar técnicas de controle dos danos.

Metodologia: fazendas da região cacauera do sul da Bahia estão sendo monitoradas para avaliar os prejuízos provocados por animais silvestres a cultivos agrícolas, identificação das espécies causadoras dos danos através de armadilhas de rastros e análise dos danos. Nos locais onde é determinada a ação de caititus está sendo estimada a densidade populacional desta espécie. Avaliação das técnicas de controle dos danos como diversos tipos de cercas e uso de repelentes.

Período de Estudo: 3/2004- 3/2006.

Resultados Esperados: Estabelecer se caititus são realmente os causadores de prejuízos agrícolas na região cacauera da Bahia e estabelecer técnicas de controle dos danos.

Área de estudo: Fazenda Almada, Fazenda Serra do Teimoso, Propriedades do entorno do Parque Estadual da Serra do Conduru.

Agências Financiadoras: Comissão Européia (projeto INCO- pecari), Fapesb.

Problemas encontrados: dificuldades para acesso às propriedades na época das chuvas e na identificação das espécies causadoras de danos.



Collared peccary. Photo by WCS Bolivia

O comportamento de brincadeira em queixadas (*Tayassu pecari*) e o uso de brinquedos como enriquecimento ambiental

Participantes: Dra. Selene Siqueira da Cunha Nogueira (**coordenadora**); Jackeline Prates Soledade (bolsista CNPq) aluna de mestrado PPG Zoologia-UESC.

Local de execução: Laboratório de Etologia Aplicada, Departamento de Ciências Biológicas, Universidade Estadual de Santa Cruz, rod. Ilhéus – Itabuna, km16 Salobrinho, Ilhéus – BA, Brasil CEP 45650000.

Objetivo: O objetivo do presente projeto é descrever o comportamento de brincadeira em queixadas e avaliar o uso de técnicas de enriquecimento ambiental para propiciar o bem-estar dos animais mantidos em cativeiro, seja em zoológicos ou recintos para a produção zootécnica.

Metodologia: um grupo de 25 queixadas, composto por 6 machos, 14 fêmeas e cinco filhotes foram classificados em três faixas etárias: filhotes, jovens e adultos. O método de observação utilizada é animal focal (Altmann, 1974). O estudo foi dividido em duas fases, na primeira com o registro de todas as interações sociais entre os animais incluindo as interações de brincadeiras e na segunda com a introdução de enriquecimento, objetos para estimular o comportamento de brincadeira ou curiosidade dos animais.

Área de estudo: Fazenda Experimental do Almada da Universidade Estadual de Santa Cruz, Ilhéus, BA.

Período de Estudo: 08/2003-03/2006.

Resultados esperados: descrever o comportamento de brincadeira em queixadas, desenvolver técnicas de enriquecimento ambiental para a espécie.

Agências Financiadoras: FAPESB, CAPES, CNPq.

Problemas encontrados: dificuldade em adquirir mão de obra de nível básico e fomento para a contratação de apoio técnico.

Necessidade de estagiários: Aceitamos estagiários, porém não garantimos a oferta de bolsas de estudos para alunos oriundos de outras instituições.

Influências da estrutura da paisagem nos aspectos ecológicos, comportamentais e sanitários de ungulados silvestres em áreas de Floresta com Araucária, Paraná, Brasil

Gisley Paula Vidolin - paula@biositu.com.br; George Ortmeir Velastin - george@biositu.com.br; Paulo Rogerio Mangini - pmangini@uol.com.br

Tipo de Pesquisa: Tese de Doutorado. Este projeto está focado ao estudo de três espécies de ungulados: *Tayassu pecari* (queixada) e *Pecari tajacu* (cateto).

Objetivos: O objetivo principal desta proposta é a obtenção de informações sobre as influências da estrutura da paisagem nos aspectos ecológicos, comportamentais e sanitários de *Tapirus terrestris* (anta), *Tayassu pecari* (queixada) e *Pecari tajacu* (cateto), no Parque Estadual das Araucárias e fragmentos florestais adjacentes. Como objetivos específicos pretende-se:

- ✦ identificar e caracterizar os principais fragmentos florestais e corredores ecológicos utilizados pelas espécies estudadas, definindo se as mesmas restringem sua área de vida às condições preferenciais do habitat;
- ✦ apontar alternativas de manejo às áreas de vizinhas ao Parque que compatibilizem o desenvolvimento de atividades de produção com as conservação das espécies;
- ✦ fornecer informações que possam subsidiar ações futuras do Projeto Paraná Biodiversidade, referentes a implantação do Corredor Araucária;

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- ✦ estabelecer a importância destes ungulados na dispersão e predação de sementes;
 - ✦ investigar as relações da fragmentação florestal e o estado sanitário das populações de ungulados silvestres;

fornecer informações que possam subsidiar ações futuras da Política Estadual de Proteção à Fauna Nativa - SISFAUNA, referentes à elaboração de um plano de ação regionalizado de proteção às espécies e seus habitats.

Metodologia:

A - Estudo da Paisagem: Os procedimentos metodológicos a serem adotados para o estudo da paisagem, baseiam-se na análise dos aspectos estruturais e funcionais dos elementos que constituem a paisagem da área de estudo, correlacionados com os requisitos ecológicos básicos das espécies de ungulados selecionados. Para tanto, os fragmentos serão amostrados *in loco* de forma sistematizada e padronizada. Os requisitos ecológicos básicos das espécies serão utilizados como critérios de seleção dos elementos da paisagem a serem avaliados. A definição de tais requisitos será baseada em informações bibliográficas e conhecimento prévio sobre a ecologia e comportamento das espécies.

B - Monitoramento das espécies: A determinação da frequência de uso dos fragmentos de habitats e intensidade de movimentos entre os fragmentos pelas espécies será realizada de duas formas: captura e marcação dos animais e análises de coleta de sinais de utilização.

C - Disponibilidade de recursos / oferta de alimento: será realizado um levantamento florístico nos fragmentos estudados, o que tornará possível a caracterização da composição e estrutura das comunidades vegetais, bem como das espécies vegetais que possam fazer parte da dieta dos ungulados focados neste estudo. As informações provenientes deste levantamento serão associadas com o material encontrado nas amostras fecais coletadas.

D - Aspectos clínico-sanitários: serão realizadas do material biológico coletado hemograma completo, análises do perfil bioquímico e mineral, levantamento sorológico de doenças infecto contagiosas e análises parasitológicas.

E - Identificação de alternativas viáveis de manejo para as áreas de entorno dos remanescentes florestais, que permitam a conservação das espécies em estudo: será realizado através de uma análise das propriedades, sendo identificados os produtores, as principais atividades desenvolvidas, o tipo de manejo realizado, o nível de conhecimento e o grau de interesse dos proprietários em desenvolver ou aprimorar as atividades de produção.

Período de Estudo: Este projeto teve início em junho de 2005 com a realização de análises em laboratório de mapas, imagens e fotos de satélite da região de estudo, que permitirá a identificação do número, tamanho, tipo de cobertura florestal, disposição espacial e o grau de conservação das áreas. controle. As fases de campo estão previstas para setembro de 2005. Este projeto é de longa duração, sendo prevista uma etapa inicial de três anos consecutivos.

Resultados Esperados

- ✦ Mapas dos biótopos-chaves prioritários à conservação.
- ✦ Mapas com a indicação de corredores ecológicos existentes, ou que necessitem ser recuperados ou implantados, servindo de base ao Programa Paraná Biodiversidade/ Corredor Araucária.
- ✦ Informações disponibilizadas sobre as inter-relações das espécies de ungulados e seus ambientes físicos, que poderão servir como referência para o manejo das espécies e do bioma Floresta com Araucária.
- ✦ Técnicas/ atividades indicadas para a melhoria do manejo da paisagem local.
- ✦ Grupos de parasitos de ocorrência local e sua distribuição espacial e temporal dentro das áreas estudadas.
- ✦ Prevalência de doenças infecto-contagiosas local dos animais selvagens e orientação aos

proprietários rurais sobre o manejo adequado para os animais domésticos da região.

✦ Lista dos itens alimentares consumidos pelas espécies, associadas aos diferentes tipos de ambiente avaliados.

Diretrizes para o plano de ação regional das espécies, servindo de base à Política Estadual de proteção à Fauna Nativa/ SISFAUNA.

Área de Estudo: O Parque Estadual das Araucárias, com 1.052,13 ha de Floresta Ombrófila Mista, localizado nos municípios de Palmas e Bituruna - região incluída na bacia hidrográfica do Rio Iguaçu-, é considerado área "controle" para este estudo. Adicionalmente, serão amostrados fragmentos florestais adjacentes, cujas formas, tamanhos, grau de isolamento e tipos de conexão são bastante variados. Também serão realizadas amostragens na RPPN das Araucárias, situada no município de General Carneiro.

Financiamento: CAPES

Problemas encontrados: Apoio financeiro.

Necessidade de estagiários: No momento não.

Costa Rica

Selección de hábitat y actividad diaria del chanco cariblanco (*Tayassu pecari*) utilizando trampas-cámaras en el Parque Nacional Corcovado, Costa Rica

Investigadores:

1. **Nereyda Estrada**, Posgrado en Biología, Universidad de Costa Rica (UCR), nereyda.estrada@gmail.com
 2. **Eduardo Carrillo** Ph.D, Instituto Internacional en Conservación y Manejo en Vida Silvestre (IICMVS), Universidad Nacional (UNA),
 3. **José Manuel Mora** Ph.D, Posgrado Regional en Biología, Universidad de Costa Rica (UCR)
- Jorge Lobo Segura** Ph.D., Posgrado Regional en Biología, Universidad de Costa Rica (UCR)

Tipo de investigación: Tesis de Maestría en Biología de Nereyda Estrada. El proyecto es un componente del Programa Jaguar del IICMVS-UNA

Objetivo: Analizar la selección de hábitat a nivel de macrohábitat y microhábitat por el chanco cariblanco. Evaluar el uso de trampas-cámara en este tipo de investigación. Descripción de sitios de bañaderos.

Metodología: Se colocaron 14 estaciones con trampas-cámara en un área de 80km² por 15 meses (dos estaciones lluviosas y una seca). Se registro la abundancia relativa de chanchos a través de la tasa fotográfica (# de fotos/días trampas-cámara). Se analizó la disponibilidad de macrohábitats mediante mapas con el programa Arcview 3.3. Para describir el microhábitat se midió 8 variables en cada estación de muestreo (ej. cobertura dosel y sotobosque, obstrucción visual, cuerpos de agua, densidad de palmas, etc.). Se monitoreo durante dos meses de 08:00 -16:00h dos bañaderos, se registro la llegada de grupos de chanchos, horas y tamaños de grupo. Se describió la estructura física y vegetal de los bañaderos. Además se realizó pruebas gravimétricas y químicas de muestras de suelo del barro de bañaderos.

Sitio de estudio: Parque Nacional Corcovado, Puntarenas, Costa Rica.

Período de Estudio: Agosto 2003- Noviembre 2004

Financiadores: WCS, IICMVS-UNA, Servicio de Intercambio Académico Alemán DAAD, Idea wild.

Ecuador

Cacería y Comercialización de Fauna Silvestre en Dos Comunidades Kichwas del Parque Nacional Yasuní, Amazonía Ecuatoriana

Investigadores Principales:

Esteban Suárez, Galo Zapata Ríos, Rubén Cueva

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Tipo de Investigación: Estudio de línea base. Este no es un proyecto específico de pecaríes; sin embargo, esta especie es una de las más apreciadas por los cazadores Kichwas. El proyecto proveerá información sobre el número de pecaríes cazados y el impacto sobre las poblaciones locales.

Objetivos:

- Caracterizar los patrones de cacería en dos comunidades kichwas localizadas en el Parque Nacional Yasuní.
- Estimar la sustentabilidad de la tasa actual de extracción de animales.

Caracterizar los sistemas de comercialización de vida silvestre capturada en el sector norte del Parque Nacional Yasuní

Metodología: La metodología se basa en entrevistas a los cazadores. Se utilizan formularios estandarizados para realizar un inventario de las especies cazadas, una caracterización de los patrones de cacería y determinar el destino de las presas (subsistencia vs. comercial). Las preguntas en las entrevistas están relacionadas con las especies de fauna cazadas (peso, sexo, edad, estado reproductivo), métodos de caza (tipo de arma, tiempo de duración de las actividades de cacería, lapsos entre una incursión y otra, esfuerzo invertido por parte del cazador), lugar de la cacería (distancia desde el centro poblado), destino final del producto y usos de las especies con otro fin que no sea la alimentación. Además del trabajo en las comunidades, se está recolectando información en el mercado de fauna silvestre más grande en el área de estudio (Pompeya). Los registros incluyen especies comercializadas, número de individuos, peso, lugar de origen, lugar de destino y precios. Adicionalmente se están haciendo esfuerzos por caracterizar todo el proceso de comercialización de carne de monte, desde el momento en que se caza la presa, hasta que llega a los restaurantes de centros urbanos donde es vendida al público.

Sitio de Estudio: En la sección norte del Parque Nacional Yasuní, a orillas del río Napo, se encuentran ubicadas varias comunidades Kichwas entre las que se encuentran las de Indillama y Nueva Providencia. Las comunidades están formadas, en promedio, por 25 familias. Los pobladores de estas comunidades tienen un origen multiétnico, a partir de varios grupos amazónicos y andinos. La fusión de estos grupos se dio desde épocas precolombinas y a lo largo de varios siglos. El sistema tradicional de subsistencia se basaba en la caza, pesca, y recolección de frutos del bosque. Estas actividades se ven ahora complementadas con la venta de productos agrícolas, animales domésticos y carne de monte. El centro de comercio más importante en la zona es Pompeya, comunidad Kichwa compuesta por aproximadamente 150 familias. El área de estudio, aunque aparentemente bastante bien conservada, está sufriendo el impacto de la cacería con fines comerciales, la fuente de ingresos más importante en Indillama y Nueva Providencia.

Período de estudio: Marzo de 2005- Febrero de 2006.

Resultados Esperados:

Inventario de la cacería (especies, número de individuos, biomasa, peso, sexo, edad, estado reproductivo).

Descripción de métodos de cacería (tipo de arma, tiempo de duración de las actividades de cacería, lapsos entre una incursión y otra, esfuerzo invertido por parte del cazador).

Descripción de la comercialización del producto de la cacería (proporción de carne vendida vs. consumida localmente, precios a nivel local, y descripción de la cadena de comercialización a nivel provincial).

Estrategias de manejo de fauna silvestre, diseñadas a nivel local como resultado de un proceso participativo.

Financiadores: Este estudio es parte del Programa de Paisajes Vivientes de WCS financiado por USAID y del Programa de Conservación de Paisajes Amazónicos de WCS financiado por The Moore Foundation.

Monitoreo de mamíferos grandes a lo largo de carreteras para explotación petrolera en el Parque Nacional Yasuní y su área de influencia, Amazonía ecuatoriana

Investigadores Principales:

Esteban Suárez, Galo Zapata Ríos, Víctor Utreras B., Javier Vargas.

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Tipo de Investigación: Proyecto a largo plazo. Este no es un proyecto enfocado únicamente en pecaríes; sin embargo, se obtendrán datos de densidad poblacional y abundancia relativa para esta especie como parte del estudio que incluye varias especies de mamíferos grandes.

Objetivos:

- Estimar y comparar la densidad poblacional de mamíferos grandes a lo largo de dos carreteras construidas con una diferencia de 15 años y que presentan distintos niveles de intervención humana.

Determinar cambios temporales en la composición y estructura de las comunidades de mamíferos grandes causados por la intervención de actividades humanas.

Metodología: Se están utilizando 18 transectos lineales para estimar la densidad poblacional de mamíferos grandes con base en observaciones directas. En cada carretera y en una zona de control (bosque no intervenido) existen seis transectos de 1,5 km de longitud, independientes el uno del otro. Los recorridos diurnos y nocturnos se realizan todos los meses. La información que se registra en cada transecto incluye; especie, hora de la observación, distancia animal-observador, ángulo formado entre el transecto y la distancia animal-observador, localización de la observación dentro del transecto y altura; en el caso de especies sociales la distancia se mide al centro del grupo. Esta información se complementa con el registro de huellas y signos para obtener índices de abundancia relativa que permiten determinar tendencias poblacionales a lo largo del tiempo.

Sitio de estudio: El Parque Nacional Yasuní, ~ 01°00'S 76°00'W, ubicado en el Ecuador oriental tiene una superficie aproximada de 1.000.000 ha. Se encuentra ubicado al pie de los Andes en un rango altitudinal entre 200 y 500 m. El paisaje se encuentra dominado por grandes bloques de bosque de *terra firme* divididos por ríos y riachuelos rodeados de bosques inundables y pantanos dominados por palmas. En la región la temperatura media anual es de 25 °C, mientras que el volumen anual de precipitación es de aproximadamente 4.500 mm, distribuida a lo largo del año, sin que exista una estación seca bien definida. Yasuní contiene una diversidad inconmensurable de plantas y animales, lo cual lo con-

vierte, tanto por el número absoluto de especies como por el número de especies por unidad de área, en una de las localidades más biodiversas del planeta.

Período de estudio: Inició en Enero de 2005. La fecha de finalización es indeterminada (financiamiento asegurado hasta julio de 2006).

Resultados Esperados:

- Estimaciones de densidad poblacional para mamíferos grandes en la Amazonía ecuatoriana.
- Abundancia relativa y tendencias poblacionales a lo largo del tiempo.

Un mejor entendimiento de los efectos de las intervenciones humanas asociadas a la construcción y operación de carreteras, sobre las comunidades de fauna silvestre en el Parque Nacional Yasuní.

Financiadores: Este estudio es parte del Programa de Paisajes Vivientes de WCS financiado por US-AID y del Programa de Conservación de Paisajes Amazónicos de WCS financiado por The Moore Foundation.

Guatemala

Implementación de un programa de monitoreo del jaguar (*Panthera onca*), el ocelote (*Leopardus pardalis*), pecaríes de labio blanco (*Dicotyles pecari*) y de collar (*Tayassu tajacu*) y otros vertebrados terrestres mayores en el Parque Nacional Mirador-Río Azul, Petén, Guatemala utilizando cámaras remotas de detección.

Investigador principal: **José Soto**

Asistentes de investigación: **José Moreira y Guillermo López**

Asistentes de campo: **Ramón Peralta y Marcelo Videz** (Asociación Balam), Guarda recursos del Consejo Nacional de Áreas Protegidas (CONAP)

Tipo de investigación: Es un trabajo conjunto entre Wildlife Conservation Society (Programa para Guatemala) y Asociación Balam para la Conservación de los Recursos Naturales y Culturales integrados. En el estudio, dos estudiantes de la Universidad de San Carlos de Guatemala realizarán sus prácticas y obtendrán información para sus tesis de licenciatura.

Este estudio es un componente de un proyecto bi-nacional (Guatemala y Belice) que se inició el año pasado para monitorear jaguares y otros vertebrados mayores con cámaras remotas de detección. El componente de jabalís es nuevo para el otro año, así como otro componente que busca caracterizar las aguadas (que son la única fuente de agua para los animales durante la época seca en el Parque) y recaudar más información de ellas. El proyecto forma parte del Programa de Paisajes Vivientes del programa para Guatemala de WCS que busca reducir las amenazas a la biodiversidad mediante programas enfocados en la conservación y el manejo adaptativo de especies a nivel de paisaje.

Objetivos:

1. Evaluar el estado poblacional de pecaríes de labio blanco en el Parque Nacional Mirador-Río Azul (PNMRA), Petén, Guatemala
2. Implementar un programa de monitoreo de pecaríes de labio blanco en la Reserva de la Biosfera Maya, Petén, Guatemala.
3. Evaluar 3 metodologías para cumplir con los objetivos 1 y 2 anteriormente descritos.

Recaudar información poblacional (número de manadas, número de individuos por manada, proporción de sexos) y biológica (uso de hábitat, dieta, comportamiento) para pecaríes de labio blanco en el PNMRA.

Metodología: Aprovechando el hecho de que los pecaríes visitan diariamente aguadas en el Parque para darse baños de lodo, dichas aguadas se utilizarán como puntos de conteo. Un mes antes de iniciar

los muestreos se visitarán las aguadas y observarán las manadas. Se elaborará un mapa donde se observen las aguadas con mayor probabilidad de visita por manadas. Al observar una manada, se marcarán todos los animales posibles de cada manada por medio de pistolas de agua con un color diferente por manada con una pintura no tóxica. Se marcará un número limitado de animales. Los animales se marcarán en el lomo para asegurarnos que los individuos no ingieran la pintura y que las marcas puedan ser captadas por las cámaras. Para no afectar su comportamiento, la pintura no será permanente, ni extremadamente fuerte y la manera de aplicación será por medio de pistolas de agua de poca presión. Otra opción que se está considerando es capturar un número de jabalís por manada y colocarles marcas en las orejas, sin embargo aún se están buscando fondos para esto (incluyendo para collares de radio telemetría). Los muestreos de las manadas marcadas se harán de tres formas distintas: 1) Con cámaras remotas de detección marca Camtrakker®. Ubicadas en las aguadas, 2) Muestreo participativo. Se construirá 1 plataforma (llamados tapescos por las personas locales) sobre un árbol en cada aguada. Dos personas en cada plataforma vigilarán y tomarán diferente información sobre las manadas de pecaríes. También se colectarán excretas. Todas las aguadas dentro de un área determinada serán vigiladas para tener una población geográficamente cerrada y así asegurarnos que ninguna manada que pueda estar en el área no sea observada. Las personas llegarán a las 8 de la mañana a cada aguada y se sentarán en las plataformas hasta las 4 de la tarde. Si se observa que ninguna manada presenta la marca que previamente se le hizo, se procederá a hacerles una nueva marca (en caso de que sea por marca por pintura) y 3) La misma metodología utilizada en el inciso anterior se utilizará con 4 personas. El área se dividirá en dos, y durante un mes, dos personas vigilarán las aguadas (una por día). Al ingresar una manada se registrará la misma información que en el inciso anterior.

Nota: actualmente se están buscando fondos para obtener collares de radio telemetría, si se logran obtener, se comprarán 5 collares y colocarán uno por manada para determinar rangos de acción y uso de hábitat del pecarí de labios blancos en el PNMRA.

Sitio de estudio: El Parque Nacional Mirador-Río Azul (PNMRA) se localiza al norte del Parque Nacional Tikal, en el departamento del Petén y posee una zona intangible de 116,911 ha. El PNMRA se encuentra en la frontera con México al norte de Guatemala y de Belice al este. Se cree que el PNMRA, en conjunto con el Biotopo Protegido Naachtún-Dos Lagunas (BDL), constituyen un espacio que permite el flujo de especies y la continuidad de los ecosistemas al Norte de la Reserva de la Biosfera Maya con la Reserva de Biosfera de Calakmul (RBC) en México y al este con la Reserva de Río Bravo (RRB) y Reserva Gallon Jug (RGJ) en Belice (CONAP, 2002) (McNab y Polisar, 2002).

Período de estudio: Enero a Junio del 2006. Si se consiguen los collares, el estudio durará hasta diciembre del 2006.

Financiadores:

Wildlife Conservation Society (WCS) - Programa para Guatemala

Consejo Nacional de Ciencia y Tecnología (CONCYT), a través de su Fondo de Ciencia y Tecnología (FODECYT)

Asociación Balam para la Conservación de los recursos naturales y culturales integrados.

Principales problemas:

Obtención de fondos, aunque ya contamos con financiamiento, pensamos que este no será suficiente, especialmente para el componente de jabalís. Deseamos recaudar la mayor cantidad de información posible de esta especie, ya que es el primer y único estudio que existe en Guatemala para esta especie, y consideramos esta actividad de carácter urgente debido a que recientemente se aprobó una nueva ley de cacería en el país que permite cazar pecaríes de collar y labio blanco todo el año.

También debido a lo anterior (que es el primer estudio de pecaríes) no contamos con suficiente experiencia, nos gustaría obtener sus recomendaciones y críticas hacia el diseño de este trabajo. Consideramos de especial importancia poder obtener un dato del número de manadas en el área de estudio, para lograr una estimación confiable de la población del Parque y luego aplicar esta metodología en las principales zonas núcleo de la Reserva de la Biosfera Maya.

Mexico

Relaciones entre el tamaño de grupo, movimientos y la disponibilidad de alimento en el Pecarí de Labios Blancos (*Tayassu pecari*) en la Reserva de la Biósfera de Calakmul, Campeche, México

Investigador Responsable **M. Sc. Rafael Reyna-Hurtado**

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Tipo de Proyecto: Tesis doctoral de Rafael Reyna-Hurtado. Es un proyecto específico sobre pecarí labios blancos (*Tayassu pecari*) que quizás en el futuro se extienda al pecarí de collar (*Tayassu tajacu*)

Metas: Contribuir al conocimiento ecológico básico de los grupos de PLB en la Reserva de la Biosfera de Calakmul a través de la Investigación de las relaciones entre el tamaño de grupo y movimientos de esta especie con la disponibilidad de alimento, así como estimar la importancia de otras características del paisaje (cuerpos de agua, tipos de vegetación) en dichas variables del comportamiento. La meta final es obtener información clave para la elaboración de planes de conservación de esta especie en Calakmul y otras áreas de Mesoamérica.

Objetivos:

- Estimar patrones de movimiento en grupos de PLB que habitan en tres áreas con diferentes grados de disponibilidad alimenticia dentro de la RBC.
- Registrar el tamaño de grupo y mantener un monitoreo temporal de grupos de PLB en las tres áreas arriba mencionadas.
- Realizar observaciones de comportamiento detalladas acerca de las relaciones sociales, hábitos alimentarios e impacto de grupos de PLB en la estructura del bosque en las tres áreas dentro de la RBC.

Relacionar el tamaño de grupo y los patrones de movimiento observados en grupos de PLB con otras características del paisaje (tales como densidad de cuerpos de agua, tipos de vegetación etc.) dentro de la RBC.

Métodos: Este es un estudio comparativo que involucra el estudio del tamaño y movimiento de cuatro grupos de PLB en un área con contrastante disponibilidad de alimentos. Pecaríes de cuatro grupos han sido capturados y marcados con collares de radio-telemetría para su posterior seguimiento y se colectan datos detallados acerca de los movimientos y el tamaño del grupo. La disponibilidad de alimentos es estimada de manera simultánea y detallada en tiempo y espacio a través del establecimiento de transectos y parcelas permanentes en esas áreas para relacionarla con las variables obtenidas de los grupos

(Continued on page 32)



← Female white-lipped peccary in Calakmul Mexico. Photo by Rafael Reyna



↕ White-lipped peccary in Calakmul, Mexico. Photos by Rafael Reyna



Rafael Reyna Edith Rojas-Flores and Nicolas Arias working on white-lipped peccary. ↑



de PLB en estudio.

Sitio de estudio: Este estudio es llevado a cabo en la Reserva de la Biosfera de Calakmul que se localiza en el sur de México en el estado de Campeche. Es un área de bosque tropical de 723,815 hectáreas y que yace adyacente a la Reserva de la Biosfera Maya en Guatemala donde ambas conforman un mazo de bosque de mas de dos millones de hectáreas que las convierte en la zona boscosa tropical mas grande de Mesoamérica.

Período de Estudio: El proyecto empezó en Marzo del 2005 y se planea terminar en Mayo del 2007.

Información que proveerá el proyecto: Este proyecto proporcionará información importante acerca de los patrones de movimientos espaciales y temporales y el rango de hogar de grupos de PLB bajo diferentes condiciones de disponibilidad alimenticia. Asimismo proporcionará información referente al tamaño mínimo de área que utilizan distintos grupos de PLB, el uso y preferencia del hábitat, la dieta y preferencias alimenticias, así como la relación de los grupos con los cuerpos de agua temporales y permanentes. Esta información ayudara a entender la dinámica ecológica de la cual participa el PLB bajo las condiciones particulares de la Reserva de la Biosfera de Calakmul. Este proyecto arrojará información científica de primera mano sobre una de las especies de ungulados más raras de México y en uno de los pocos lugares libres de la influencia humana que quedan en el país. Estos datos pueden servir de comparación para futuros estudios del PLB en lugares perturbados de México y serán importantes para entender las relaciones del PLB con el bosque tropical y sus atributos. Finalmente, es probable que la información obtenida en esta investigación ayude a explicar porque esta especie ha desaparecido de varias áreas de su rango de distribución en los últimos años y contribuya a conocer los requerimientos necesarios para garantizar su supervivencia y lograr su conservación en México y otras áreas de Mesoamérica.

Financiadores: Este proyecto esta financiado por la Sociedad para la Conservación de la Vida Silvestre (WCS, Wildlife Conservation Society, New York) a través del Research Fellowship Program

Principales Problemas: La escala de movimientos de los pecaríes de labios blancos y la falta de sitios elevados para seguirlos hace necesario que el equipo humano se traslade grandes distancias a pie y sin caminos pre-establecidos. Corremos el riesgo de perder ejemplares si se salen de la zona de estudio.

Necesidad de asistentes: Dos asistentes voluntarios a los cuales se les proporcionaría comida durante la estancia de campo son bienvenidos. Estos participarían en trabajos de monitoreo con radiotelemetría, seguimiento de grupos, recorrido de transectos de fenología de árboles y probablemente captura de ejemplares. Mayores informes a: rafaelrh@ufl.edu

Perú

Peccary-Plant Interactions

Investigador: **Dr. Harald Beck**, Assistant Professor & Curator of the Mammal Museum. Department of Biological Sciences, Towson University, 8000 York Road, Towson, MD 21252-0001. E-mail: hbeck@towson.edu Phone: (410) 704-3042, Fax: (410) 704-2405.

Tipo de investigacion: Several experimental long-term study. I also work on tapir-plant interactions in collaboration with members of the IUCN Tapir Specialists Group.

Objetivos: One of my research projects focuses on several interactions of peccaries on plants, including seed predation, dispersal, the impact of soil disturbance, and tramping on the plant community. For example, the dramatic importance of peccaries for Amazonian forest ecology is apparent to anyone who has watched a 300-strong herd of these animals thunder through the understorey. But across vast sections of the Amazon the species has now been driven locally extinct by hunters, and a new generation of Amazonian trees is growing to maturity without the massive seed predation, soil disturbance, and physical damage wrought by large peccary populations. In areas where peccaries are extinct, changes in the plant recruitment, distribution and species richness should occur, but no one yet knows what those changes are and what mechanisms underlie them. Other research projects include experi-

ments on different modes of seed dispersal and predation.

Metodología: For instance, to quantify the impact of peccary trampling on seedling and sapling communities. I have established 23 5x2 meter exclosures and same-sized control plots in Cocha Cashu and Los Amigos, Peru.

Sitio de estudio: Cocha Cashu and Los Amigos, two pristine field sites, separated over 200 km, within the Peruvian Amazon.

Período de estudio: Started in 2004. Will last for a minimum of five years, depending on the funding.

Información que proveerá el proyecto: The results will not only advance our understanding of peccary-plant interactions, but will also be crucial for future conservation strategies, i.e. what changes could be predict in the absence of these megaherbivores.

Financiadores: Currently I have no grant support.

Principales problemas: Funding and finding field assistants.

Necesidad de asistentes: I welcome Peruvian students to work in the field.

Valores referenciales de urea y creatinina en Pecaríes Labiados Blancos (*Tayassu pecari*) en zoológico del Parque de las Leyendas, Lima-Perú

(Tesis para optar el grado de Médico Veterinario)

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Resumen: Los valores de urea y creatinina de pecaríes labiados (*Tayassu pecari*) mantenidas en cautiverio fueron determinadas usando el método colorimétrico para la determinación cuantitativa de urea y creatinina en suero y orina. Las muestras de sangre fueron colectadas de un total de 44 ejemplares albergados en el Zoológico “Parque de las Leyendas” en Lima. Los animales fueron inmovilizados con clorhidrato de ketamina, las muestras de sangre fueron tomadas de la vena cava superficial; el análisis posterior fue realizado en el Laboratorio de Patología Clínica de la Universidad Nacional Mayor de San Marcos, en Lima. Los valores encontrados para urea y creatinina son: 27.4 ± 2.7 mg/dl y 2.8 ± 0.2 mg /dl respectivamente.

Abstract: The values of urea and creatinine for Peruvian peccaries (*Tayassu pecari*) in captivity were determined using the colorimetric assay. Blood samples were collected from 44 peccaries at “Parque de las Leyendas” Zoo in Lima. The animals received a tranquilizer containing clorhidrate of ketamine, the blood samples were collected from the superficial cava vein. The Serum Chemistry analysis was made in the Pathology Clinical Laboratory, Faculty of Veterinarian Medicine of San Marcos University, in Lima. The values for urea and creatinine founded were respectively: 27.4 ± 2.7 mg/dl and 2.8 ± 0.2 mg/dl.

Objetivos: El pécarí labiado (*Tayassu pecari*) conocido localmente como huangana, es una de las especies con mayor presión de caza en la Amazonía peruana. Esta especie constituye una fuente impor-

tante de carne de monte así como piel para el mercado local e internacional respectivamente, siendo considerada potencialmente viable al momento de ser introducida para su crianza en cautiverio. La identificación de los factores que pudieran afectar su salud constituye una prioridad para el manejo y desarrollo de programas de crianza en cautiverio, para esta especie. La evaluación de los índices clínicos es una herramienta importante para el diagnóstico, pronóstico y tratamiento de las enfermedades. No obstante, los valores referenciales incluyendo la bioquímica sérica renal en el pécari labiado, son escasos y fragmentarios. Por tanto, el objetivo de este trabajo, fue establecer los valores referenciales séricos para urea y creatinina en pecaríes labiados mantenidos en cautiverio.

Metodos: En este estudio se colectó 44 muestras sanguíneas (23 machos, y 21 hembras) correspondientes a la población total cautiva del Zoológico Parque de las Leyendas (Lima, Perú), se trabajó con grupos pequeños de animales (6-10) en distintas fechas para evitar el estrés. Los animales fueron inmovilizados químicamente con ayuda de un bastón jeringa el cual contenía clorhidrato de ketamina en una dosis de 10 mg/kg vía I.M.; las muestras sanguíneas fueron tomadas en tubos sin anticoagulante de la vena cava superficial; posteriormente los valores de urea y creatinina fueron obtenidos mediante el método colorimétrico.

Resultados: El promedio de los valores para urea y creatinina fueron 27.4 ± 2.7 mg/dl y 2.8 ± 0.2 mg/dl, respectivamente; no existiendo diferencia significativa entre los valores para urea en machos y hembras (29.6 ± 4.2 vs. 24.9 ± 3.0 mg/dl) así como para creatinina (2.9 ± 0.2 vs. 2.7 ± 0.2 mg/dl). Los valores hallados en este estudio son mayores que otros valores reportados por otros autores (Gallegos, 1995 y Ortiz, 1998 en Méjico, Karesh et al., 1998 en Bolivia, y el Zoológico de París, 2004). Estas diferencias podrían deberse por los diferentes sistemas de crianza en cautiverio, el perfil sanitario y nutricional así como el manejo empleado en los animales muestreados. En cualquier caso, es importante remarcar que los resultados obtenidos en este estudio son específicos para los animales objetos de este estudio.

Referencias

- Gallegos, J. 1995. Resultados preliminares de la citometría hemática y química sanguínea en el pécari de labios blancos (*Tayassu pecari*) mantenidos en cautiverio en el Zoomat XII Simposium sobre Fauna Silvestre "Gral. MV Manuel Cabrera Valtierra" 22-25 Nov. 1995. FMVZ. Univ. de Colima. Dirección de Educación Continua. UNAM. México.
- Ortiz, Sadot. 1998. Estudio de la biometría hemática y química sanguínea en pecaríes labios blancos (*Tayassu pecari*) del Zoológico Regional Miguel Alvarez del Toro en Tuxtla Gutiérrez Chiapas, México. Tesis para optar el grado de Médico Veterinario Zootecnista. Univ. Autónoma Benito Juárez de Oaxaca. México.
- Karesh, W.; M. Uhart; L. Painter; R. Wallace; E. Braselton; L.E. Thomas; T. Mc Namara; N. Gottdenker. 1998. Health evaluation of white-lipped peccary populations in Bolivia, 1998. Proceedings AAZV and AAWV Joint Conference P. 445-449.
- Parc Zoologique de Paris. 2004. *Com pers.*

Bolivia

Área de acción y uso de hábitat de *Tayassu pecari* y *Tayassu tajacu*: estudio mediante radiotelemetría en San Miguelito

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Tipo de proyecto: Investigación ecológica a largo plazo, tesis sobre métodos a corto plazo.

Objetivo: Describir la ecología de las especies.

Sitio: Estancia San Miguelito

RESUMEN: Este estudio, iniciado en 2003, se enfoca en la captura de *Tayassu pecari* y de *Tayassu tajacu*, la colocación de radio-collares GPS y/o VHF, y su seguimiento posterior. Otro objetivo del estudio es evaluar el valor de conservación de las reservas privadas donde se realiza el estudio, y el uso por parte de los pecaríes de áreas fuera de las reservas mismas.

Financiador: WCS

Problemas: Los primeros animales capturados se murieron dentro de 3 meses, los collares GPS aparentemente no logran captar puntos dentro del bosque.

Área de acción y uso de hábitat de *Tayassu pecari*: estudio mediante radio-telemetría en Guanacos

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Tipo de proyecto: Investigación ecológica a largo plazo.

Objetivo: Describir la ecología de la especie.

Sitio: Campamento Guanacos—Parque Nacional Kaa-Iya y TCO Isoso

RESUMEN: Este estudio, iniciado en 2005, se enfoca en la captura de *Tayassu pecari*, la colocación de radio-collares GPS y/o VHF, y su seguimiento posterior. Otro objetivo del estudio en esta zona de pampas y montes de Chaco seco es evaluar la relación entre la especie y el ganado vacuno, con otras especies importantes para la conservación como ser el guanaco chaqueño *Lama guanicoe voglii* y el jaguar *Panthera onca*.

Financiador: WCS

Problemas: La presencia de propiedades ganaderas y cazadores, y la tenencia de tierra incierta con un proceso de saneamiento todavía incompleto.

Estudio comparativo de salud de pecaríes (*Tayassu pecari* y *Tayassu tajacu*) y chanchos domésticos (*Sus scrofa*)

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Tipo de proyecto: Investigación veterinaria.

Objetivo: Evaluar el estado de salud de pecaríes y posibles riesgos de transmisión de enfermedades entre pecaríes y chanchos domésticos.

Sitio: Estancia San Miguelito

Resumen: Este estudio, iniciado en 2003, enfoca evaluaciones físicas, análisis de parásitos, y evaluaciones serológicas con muestras colectadas a través de la captura de *Tayassu pecari* y de *Tayassu tajacu* para estudios de telemetría. Muestras de chanchos silvestres se consiguen en los puestos ganaderos vecinos a las reservas privadas dentro de la propiedad San Miguelito. Se pretende evaluar el potencial de transmisión entre pecaríes y chanchos domésticos, y posibles problemas de salud en pecaríes.

Financiado: WCS, Universidad de Florida

Problemas:La exportación de las muestras para su análisis requiere de trámites largos, y además es costoso. Estamos buscando vínculos con laboratorios en Bolivia para reducir costos y tiempo de análisis.

Información adicional: El presente estudio fue autofinanciado, y a futuro formará parte de un proyecto en vías de desarrollo que consiste en la Evaluación del Perfil Sanitario de pecaríes en la Amazonía peruana a realizarse por la autora del presente estudio y otros colaboradores.



Attaching a radio collar to a White-lipped Peccary. Photo by Rodolfo Nallar, WCS Bolivia



From our colleagues at Pig Trop: <http://pigtrop.cirad.fr/en/index.html>



International Species Information System

This information was taken from the Pig Trop website. Actual links to ISIS and species listed below can be found at: http://pigtrop.cirad.fr/en/inquisitive/SV_isis.htm

FRANCE | • Les suidés au Proche-Orient ancien: de la domestication au tabou . Colloque organisé par le CNRS du 1 au 3 décembre 2005

C'est au Proche-Orient que commence le processus de domestication des animaux à partir du IXe millénaire : chien, chèvre, mouton, porc... dont témoignent les nombreux restes osseux mis au jour dans les fouilles. La documentation s'enrichit de représentations animales et plus tard, dès les débuts de l'écriture, de mentions dans les textes. Les relations de l'homme avec l'animal relèvent, d'une part, d'une vision utilitaire – chasse, domestication, élevage, alimentation – et, d'autre part, d'une dimension symbolique, magique ou idéologique. Il existe une très abondante documentation sur la famille des suidés : restes osseux, textes et images. Ces sources ont été fort peu exploitées jusqu'à présent, sans doute en raison de leur dispersion. Elles témoignent cependant de la présence des porcs dans tout le Proche-Orient cunéiforme.

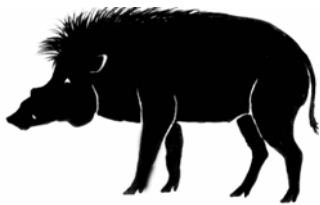
Ces animaux constituent, à plusieurs égards, un cas assez particulier par rapport aux autres espèces domestiques. Ce sont les seules bêtes élevées uniquement pour leur viande et leur graisse, alors que toutes les autres offrent, en plus de ces denrées, une utilité pratique ou d'autres produits. Aux IIIe et IIe millénaires av. J.-C., les porcs sont élevés pour être consommés ; ils vivent souvent auprès des humains et se nourrissent de leurs déchets puisqu'ils présentent la particularité d'être, comme eux, omnivores. A partir du Ier millénaire en revanche, le porc apparaît plutôt comme un animal impur, souvent associé au chien dans la documentation écrite et figurée : de multiples connotations négatives lui sont attachées. La Bible le classe parmi les animaux qu'il est interdit de manger, interdit que reprend ensuite l'Islam.

DENMARK | • IPVS 2006 Congress - Call for Abstracts

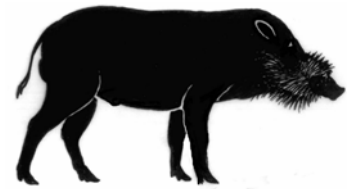
The Danish IPVS Committee invite you to the IPVS 2006 congress in Copenhagen, Denmark. The Danish IPVS 2006 committee reflects some of the important players in the Danish pig industry and the field of veterinary medicine: The Royal Veterinary and Agricultural University, The Danish Institute for Food and Veterinary Research, The Danish Veterinary Association and The Danish Bacon and Meat Council. For several decades, the International Pig Veterinary Society (IPVS) congress has been a very important and much appreciated global event for swine practitioners, scientists and affiliates. A total of 2400 delegates representing more than 50 countries attended the most recent IPVS congress, which was held in Hamburg, Germany, in July 2004. The International IPVS board has selected Copenhagen, Denmark, as the venue for the 19th IPVS congress, to be held from 16th to 19th July 2006. The Danish IPVS committee is working hard to create a well-organized congress at a high scientific level. The congress motto is "Health, welfare and economy".

Due to the generous contribution of IPVS sponsors, the registration fee is modest compared to the size of the congress and associated social activities. An IPVS fund to provide financial support for young people who would otherwise be unable to attend the IPVS 2006 congress is open for applications.

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Brief Conservation News



SCIENTIST FIND NEW SPECIES OF LARGE MAMMAL

Peter Carstens - source http://www.geo.de/GEO/wissenschaft_natur/tiere/2004_06_GEO_riesenpekari/index.html?linkref=geode_pager [translated from German by the editor]



The new peccary species © Roland Gockel/NDR Naturfilm

For three months a team of zoologists surveyed some of the remotest parts of the Brazilian jungle—and made a sensational discovery: A so far unknown species of pig, the Giant Peccary.

Indigenous inhabitants and hunters initially told the biologist Marc van Roosmalen about this fabled ungulate, claiming that it was much larger than the known peccary species. These people, the Caboclos, are descendants of rubber collectors who live in the Amazon forests along the 700 km long Rio Aripuanã. It takes a good 4 days of boat travel from Manaus through forests that are largely devoid of people.

Treasury for species hunters

Van Roosmalen, who has worked at the National Institute for Amazon Research for

many years, set off with the GEO author and film makers Lothar Frenz and two photographers. Their aim was to discover new animal species in this "Terra incognita" of zoology and botany.

Van Roosmalen has a history of such scientific discoveries. Since 1996, this primatologist has discovered no less than 20 primates, a tenth of all known species. In addition, he found 5 bird and 30 plant species, all new to science.

Indigenous help in the search

Van Roosmalen often uses indigenous knowledge in his work, because no one knows the rainforest better than they do. And what ends up in their cooking pots on a daily basis can be a scientific sensation. When hunters told van Roosmalen about their booty he strongly suspected it to be a so far

unknown species related to the Collared Peccary: the Giant Peccary. A hunted specimen confirmed this suspicion.

Peccaries are united in their own taxonomic family, different from other pig species. Only three species of peccary are known to science: the Collared Peccary, which grows up to one meter long and lives in groups of 20 to 30 animals; the White-lipped Peccary, which is a little larger than the previous species and lives in groups of up to 200 animals; and the Chacoan Peccary. The latter, very rare species was only discovered in

selves in the clearing and after a 2-minute stay returned to the forest. This gave photographer Roland Gockel just enough time to document the new species.

Everything points to a new species

The Giant Peccary with its body length of 130 cm is clearly larger than its closest relatives. The white collar around the neck is also less clearly defined than in the Collared Peccary. Initial observations also indicate obvious behavioural differences. For zoologists these characteristics are clear indications of a distinct species



Indigenous hunters, with their booty: A Giant Peccary. © Frieder Salm

1974, reaches a length of up to 1.20 meter and lives in forest areas of northern Argentine, western Paraguay, and south-eastern Bolivia.

The photo hunters

Van Roosmalen's team lay down in wait. For days they endured in a hide near a forest clearing. But their long wait was rewarded: A group of 4 of the shy forest dwelling pigs cautiously showed them-

What will be the name of this species?

The team is now waiting for genetic analyses which should clarify the phylogenetic relationship of the Giant Peccary to other peccary species. Also, a scientific name still needs to be chosen for this new species. But this much is clear: It is the first discovery of a new large terrestrial mammal species in 10 years. A true scientific sensation.

Brief conservation news (1)

Farming Wild Pigs

Source: Huynh Trung Nghia, Economic Times, 104, May 26th 2005-06-24

Wild pork has been a favorite in the wildlife specialty market. Nevertheless, policies to thoroughly close forest gates have been applied in order to protect wildlife, so resources of wildlife meat have been limited. Ironically, at wildlife restaurants, gluttonous patrons still order wildlife dishes. At a wildlife meat market on Pham Viet Chanh street of Ho Chi Minh City, the trade of wildlife meat still takes place. Where is the wild pork from?

It is from a few wild pig farmers and commercial farms that provide wild pork to the wildlife specialty market. In the past, some people hunted purebred wild pigs, began to farm the pigs and crossbred the wild pigs with another species of domestic pig in order to have a species of cross-bred wild pigs. However, this method was not effective because the cross-bred wild pigs were of low weight and poor-quality meat.

Based on a more optimal method, thoroughbred male wild pigs are cross-bred with pigs representing the top class of domestic pig in Vietnam called “Heo Moi” in Vietnamese. Thanks to the genetic features of the parent pigs, F3 generations of the cross-bred pigs have the same wild characteristics and black fur as wild pigs. This cross-bred wild pig has long fur which is thick on its neck and spreads to its back. The pig species has a straight body which is thin and long, and has big legs, a pointed snout and wild eyes. Its meat is whitish, has little fat and thin skin, and has a specific taste.

Many farmers in Binh Phuoc, Binh Duong, Tay Ninh and Dong Na and other provinces are investing in farming cross-bred wild pigs. Mr. Nguyen Van Hung, a resident of Loc Ninh District, who is farming eight wild pigs, said, “Although cross-bred pigs have been tamed, they still have a wild nature which includes loving to dig holes. So it is necessary to build solid pig pens. Additionally, B40 iron nets should be built as walls with strong foundations. The floor surface of a pig pen should be soil (no cement cover). A leaf-roof or iron roof should be fixed to cover half of the pig pen. Each pig pen section should have an area of 50 m² where five pigs are farmed. This is enough area for the pigs to live and have babies. Male pigs are put in a separate 10-square meter section. Tamed wild pigs are not rogue and do not dare to attack humans”.

Cross-bred wild pigs have different eating habits from domestic pigs because 95% of their food is mixed grass with 5% rice bran. Cross-bred pigs are fed twice a day. An adult pig consumes about two kilos of grass and 0.2 kilo of rice bran. It is simple and natural to cross-breed wild pigs. When female pigs are in heat, male wild pigs are driven into the pig pens with the females. When the females do not have sexual desire, it is an indication that they are pregnant. About 115 days later, pregnant females will bear four to seven little babies, sometimes even as much as 10 piglets. Mother pigs take care of and feed their babies. Pig farmers do not need to intervene or provide help. When young pigs are 1.5 months old, they become healthy and strong enough to be separated from their mother, and begin to live an independent life. After being fed for four months, the young pigs become adults, weighing 25 kilos each, and can be sold for meat.

Mrs. Nguyen Thi Hanh who has much experience in farming wild pigs in Bu Dang District said, “Wild pigs are so healthy and easy to farm. The only illness they get is disease due to eating contaminated food. The diarrhea is easily cured by a special medicine. In addition, farmers do not need to worry about their wild pigs being bitten by mosquitoes or insects because they are well-adapted to natural conditions everywhere”.

During the process to shifting into planting new trees and farming new animals of higher economic productivity, farming cross-bred wild pigs is a good way to bring good profits to farmers. With a price of 210,000 VND/ a kilo for cross-bred wild pigs as breeding stock, the investment capital is considerable. Any way, the Anfa Company Limited in Ho Chi Minh City is promoting cooperation with farm-

ers and farms in developing stock of cross-bred wild pigs in southern Vietnam. The company will provide support and advice in terms of building pigsties and farms, farming techniques genetic conservation, and so on.

At present, a kilo of cross-bred wild pork is sold for around 150,000 VND, the supply does not satisfy the demand, and wildlife restaurants are full of patrons. This proves that farming cross-bred wild pigs is a new and prosperous trade.

Brief conservation news (2)

How close are pushy pigs to humans?

Source: BBC News. Martin Cassidy. BBC Northern Ireland rural affairs correspondent. 30 November 2005.

Scientists have got to the bottom of stress in pigs, delving into the background and motivation of animals who seem to make life difficult for themselves and others. It's a salutary tale where a poor background and naked ambition can lead to a life of aggression and stress. When she began studying pig behaviour at the Agricultural Research Institute at Hillsborough in County Down, scientist Niamh O'Connell was soon struck by the human parallels in the complex social structures which rule the lives of pigs and people. Not that it's all hustle, bustle and stress in the pig world. Niamh says some individuals make a very clear decision to accept lower social status for the sake of a quiet life. "What is interesting from a human perspective is that low-ranking animals tend to adopt one of two strategies," she says. "You have got the animals who accept their station in life and then you have got the other ones that are continually trying to climb, and as a consequence, their life is very stressed."

The research involved watching pigs for hours on end. Cameras were installed in the piggeries to help track the daily lives of piglets, adolescents and adults. It soon became clear, that just like humans, no two pigs are the same and all sorts of philosophies and lifestyle strategies are adopted by the inhabitants of the piggery in a bid to get the most out of life. Some pigs, often the meek and physically weaker animals, decide to opt for as little confrontation as possible. Rather than pushing and shoving to get their snout into the feeder, they will wait until the others have fed. Some will even wait until after dark to feed, with the prospect of a quiet stress-free meal being worth enduring hunger pangs.

Contrast that style with the born fighters who contest everything, even the best lying space with their peers. These pigs have ambitions to be high status individuals. When the feed arrives, these pushy pigs are determined to get their full share - and now. They push, they squeal and it may be stressful, but that's life, right? Surprisingly the stress addicts are not always the biggest pigs in the pen. But what they lack in size, they make up for with sheer aggression. Sadly for them, they will probably never make it to the top of the social ladder - the bigger, smarter pigs see to that - but these pushy pigs are prepared to endure high levels of stress in an endless battle to improve their social standing.

The scientists have been asking where all this aggression comes from. Were these pigs born pushy or had their life experience shaped the sort of animals they had become? Niamh O'Connell decided to look into the pigs' formative years to see if early life experiences could be responsible. The young scientist was looking for early influences in the development of the pigs' personalities. The results were startling. The contrast in behaviour of animals from good and bad homes was clear to see. Pigs reared in comfortable, stimulating backgrounds developed into adults who regulate their societies in a much less aggressive fashion. On the other hand, pigs from impoverished and barren environments grew up to be much more aggressive and bullying.

'Well-adjusted'. Again, the human parallels were striking. And when the research team looked more

closely at what was needed to produce a well-adjusted pig, they found that piglet play had a key role in developing good social attitudes. "This is a very important learning tool for children and also for farm animals - you learn through playing how to interact with other animals, what are your strengths and weaknesses and when to stop," said Niamh O'Connell. The pig study was yielding interesting insights but there was more to come. The research had established that a good early life experience helped produce pigs who would develop stable, peaceful adult groups.

And there was another discovery - the peace dividend. For a young gilt brought up in a stable group, the scientists found that she in turn would tend to be a good mother. The scientists had found a heartening and life-affirming fact - that tenderness and care experienced as a piglet will in turn be bestowed on the next generation. And more proof was to follow in the study of adolescent pigs. Those from good backgrounds are less likely to get involved in anti-social activity. But what about those pushy pigs - can love and good mothering help save the stress junkies? Well, only to an extent. Pushy pigs it seems are victims not so much of their environments but of their own forceful personalities. Being part of a stable group will help, but a pushy pig it seems will always be a pushy pig. Again the human parallel is striking.

Brief conservation news (3)

Zoo drama after animal escapes

Source: BBC NEWS, http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/england/devon/4256162.stm. 17 September 2005

Visitors to Paignton Zoo fled to safety inside the attraction's buildings after one of the zoo's animals escaped. The female peccary, a member of the pig family, escaped on Saturday afternoon and visitors were contained while a vet was called. After 40 minutes the tusked creature, which is classified as one of the zoo's dangerous animals, was cornered in the elephant enclosure. A vet shot it with a tranquilliser dart and it is now recovering. An investigation has started into how it escaped. The animal is also known as a Javelina because of its razor-sharp tusks. It was one of two which had arrived at the zoo on Thursday and it was the first time it had been in its enclosure. Duty manager Christopher Wreford-Brown said that zoo staff train for this kind of emergency. "But it has never happened in the 10 years I have been here," he said. "They can be dangerous, they can attack when cornered so the vet was called and the visitors were asked to stay inside while it was caught." One visitor, Tim Scofield, who was at the zoo with his wife and two young children said: "We were all ushered into the restaurant and the shop." Visitors have now been allowed back into the zoo.

Brief conservation news (4)

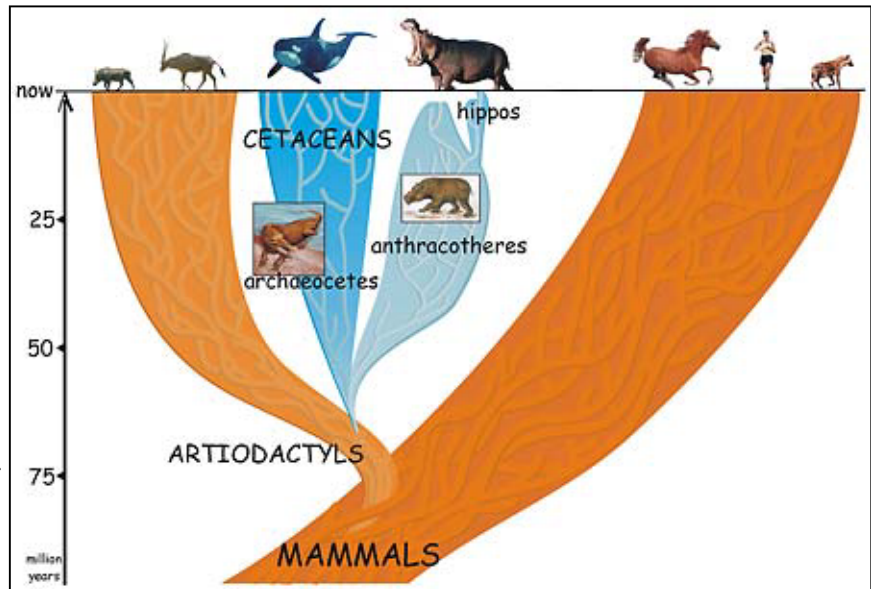
French scientists find missing link between the whale and its closest relative, the hippo

Source: Robert Sanders, Media Relations, 24 January 2005. http://www.berkeley.edu/news/media/releases/2005/01/24_hippos.shtml

A group of four-footed mammals that flourished worldwide for 40 million years and then died out in the ice ages is the missing link between the whale and its not-so-obvious nearest relative, the hippopotamus. The conclusion by University of California, Berkeley, post-doctoral fellow Jean-Renaud Boisserie and his French colleagues finally puts to rest the long-standing notion that the hippo is actually related to the pig or to its close relative, the South American peccary. In doing so, the finding reconciles the fossil record with the 20-year-old claim that molecular evidence points to the whale as the

closest relative of the hippo. "The problem with hippos is, if you look at the general shape of the animal it could be related to horses, as the ancient Greeks thought, or pigs, as modern scientists thought, while molecular phylogeny shows a close relationship with whales," said Boisserie. "But cetaceans – whales, porpoises and dolphins – don't look anything like hippos. There is a 40-million-year gap between fossils of early cetaceans and early hippos."

In a paper appearing this week in the Online Early Edition of the Proceedings of the National Academy of Sciences, Boisserie and colleagues Michel Brunet and Fabrice Lihoreau fill in this gap by proposing that whales and hippos had a common water-loving ancestor 50 to 60 million years ago that evolved and split into two groups: the early cetaceans, which eventually spurned land altogether and became totally aquatic; and a large and diverse group of four-legged beasts called anthracotheres. The pig-like anthracotheres, which blossomed over a 40-million-year period into at least 37 distinct genera on all continents except Oceania and South America, died out less than 2 and a half million years ago, leaving only one descendent: the hippopotamus.



The family tree of modern whales and their first cousin, the hippopotamus, showing how the now-extinct anthracotheres are the link between their distant ancestors. (Credit: Jean-Renaud Boisserie/UC Berkeley)

The origin of hippos has been debated vociferously for nearly 200 years, ever since the animals were rediscovered by pioneering French paleontologist Georges Cuvier and others. Their conclusion that hippos are closely related to pigs and peccaries was based primarily on their interpretation of the ridges on the molars of these species, Boisserie said. "In this particular case, you can't really rely on the dentition, however," Boisserie said. "Teeth are the best preserved and most numerous fossils, and analysis of teeth is very important in paleontology, but they are subject to lots of environmental processes and can quickly adapt to the outside world. So, most characteristics are not dependable indications of relationships between major groups of mammals. Teeth are not as reliable as people thought." As scientists found more fossils of early hippos and anthracotheres, a competing hypothesis roiled the waters: that hippos are descendents of the anthracotheres.

All this was thrown into disarray in 1985 when UC Berkeley's Vincent Sarich, a pioneer of the field of molecular evolution and now a professor emeritus of anthropology, analyzed blood proteins and saw a close relationship between hippos and whales. A subsequent analysis of mitochondrial, nuclear and



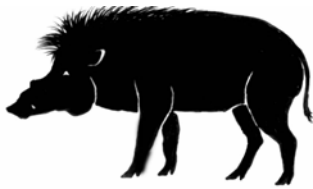
Skulls of a 9 million-year-old anthracothere, *Merycopotamus medioximus*, from Pakistan's Siwalik Hills and a contemporaneous fossil hippopotamus (*Hexaprotodon sivalensis*) from the same area exhibit many similarities, including the eye socket, which protrudes above the skull to let the animals see above water while most of their head is submerged. (Anthracothere skull courtesy of Harvard University & Geological Survey of Pakistan; hippo skull from the Natural History Museum, London)

ribosomal DNA only solidified this relationship. Though most biologists now agree that whales and hippos are first cousins, they continue to clash over how whales and hippos are related, and where they belong within the even-toed ungulates, the artiodactyls. A major roadblock to linking whales with hippos was the lack of any fossils that appeared intermediate between the two. In fact, it was a bit embarrassing for paleontologists because the claimed link between the two would mean that one of the major radiations of mammals – the one that led to cetaceans, which represent the most successful re-adaptation to life in water – had an origin deeply nested within the artiodactyls, and that morphologists had failed to recognize it. This new analysis finally brings the fossil evidence into accord with the molecular data, showing that whales and hippos indeed are one another's closest relatives. "This work provides another important step for the reconciliation between molecular- and morphology-based phylogenies, and indicates new tracks for research on emergence of cetaceans," Boisserie said.

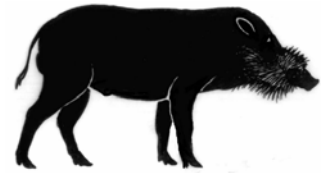
Boisserie became a hippo specialist while digging with Brunet for early human ancestors in the African republic of Chad. Most hominid fossils earlier than about 2 million years ago are found in association with hippo fossils, implying that they lived in the same biotopes and that hippos later became a source of food for our distant ancestors. Hippos first developed in Africa 16 million years ago and exploded in number around 8 million years ago, Boisserie said. Now a post-doctoral fellow in the Human Evolution Research Center run by integrative biology professor Tim White at UC Berkeley, Boisserie decided to attempt a resolution of the conflict between the molecular data and the fossil record. New whale fossils discovered in Pakistan in 2001, some of which have limb characteristics similar to artiodactyls, drew a more certain link between whales and artiodactyls. Boisserie and his colleagues conducted a phylogenetic analysis of new and previous hippo, whale and anthracothere fossils and were able to argue persuasively that anthracotheres are the missing link between hippos and cetaceans.

While the common ancestor of cetaceans and anthracotheres probably wasn't fully aquatic, it likely lived around water, he said. And while many anthracotheres appear to have been adapted to life in water, all of the youngest fossils of anthracotheres, hippos and cetaceans are aquatic or semi-aquatic. "Our study is the most complete to date, including lots of different taxa and a lot of new characteristics," Boisserie said. "Our results are very robust and a good alternative to our findings is still to be formulated."

Brunet is associated with the Laboratoire de Géobiologie, Biochronologie et Paléontologie Humaine at the Université de Poitiers and with the Collège de France in Paris. Lihoreau is a post-doctoral fellow in the Département de Paléontologie of the Université de N'Djaména in Chad. The work was supported in part by the Mission Paléanthropologique Franco-Tchadienne, which is co-directed by Brunet and Patrick Vignaud of the Université de Poitiers, and in part by funds to Boisserie from the Fondation Fyssen, the French Ministère des Affaires Etrangères and the National Science Foundation's Revealing Hominid Origins Initiative, which is co-directed by Tim White and Clark Howell of UC Berkeley.



New Literature on Suiformes



Ecology and conservation studies

1. Peter, B. S., A. C. Spencer, et al. (2005). "The sociogenetic structure of a controlled feral pig population." Wildlife Research **32**(4): 297-304.

Abstract: In Australia, the feral pig (*Sus scrofa*) is a significant vertebrate pest that has an impact on agricultural production, public health and ecosystem integrity. Although feral pigs are controlled throughout much of their range, little is known about the impact that these control programs have had on the social biology, structure and the dispersal of pigs. To begin to address this, we collected demographic data and genetic samples from 123 feral pigs culled during a regional aerial shooting program over 33 pastoral properties in the semi-arid rangelands of southern Queensland, Australia. Sampling was carried out after two years of extensive control efforts (aerial 1080-baiting) and the samples therefore represented a controlled, persecuted population with a bias towards young animals. The analysis of 13 microsatellite loci suggested that females will accept multiple matings, females form loose mobs that appear to be highly dynamic social groups, and males will travel large distances between mobs. These data indicate that feral pigs in this population had a high level of social contact and form a single open population with no evidence of genetic (population) structuring. Such information may be important to integrate into management strategies, particularly the development of contingency plans regarding the spread of wildlife diseases.

2. Robinson, C. J., D. Smyth, et al. (2005). "Bush Tucker, Bush Pets, and Bush Threats: Cooperative Management of Feral Animals in Australia's Kakadu National Park." Conservation Biology October **19** (5): 1385-1391.

Abstract: Although feral animal management is often based on the proposition that introduced species threaten ecological and conservation values, that view is not necessarily shared by all stakeholders, including those indigenous people who own and co-manage Kakadu National Park with Australia's federal government. Drawing on field-based interviews with the Jawoyn people, we found that these indigenous people categorize water buffalo (*Bubalus bubalis*) as an important food source (tucker), view horses (*Equus caballus*) as bush pets, and consider pigs (*Sus scrofa*) a threat to their lands. As a result, Jawoyn people want more water buffalo in the park, have high tolerance of environmental damage caused by horses, and are open to the idea that pig population densities should be reduced. Jawoyn also advocate an adaptive and participatory approach to feral animal control so that the consequences of any management actions can be properly understood before irrevocable change occurs. These findings highlight one example of how indigenous people's ecological knowledge has adapted in response to changing landscapes and community aspirations. Co-management strategies that aim to incorporate the dynamics of indigenous people's views need to start with issues on which there is agreement between different groups and take a cautious approach to joint exploration of more contentious issues. That approach should include ongoing and on-site monitoring so that the consequences of management actions can be properly understood and comprehensively negotiated by all parties., Copyright (C) 2005 Blackwell Publishing Ltd.

3. Muwanika, V. B., S. Nyakaana, et al. (2005). "Genetic consequences of war and social strife in sub-Saharan Africa: the case of Uganda's large mammals " African Zoology **40**(1): 107-113.

Abstract: The spectacular diversity of sub-Saharan Africa's large mammals was hit by constant social strife and civil war over three decades (1970s-1990s) leading to localized extinctions and drastic reductions in population sizes for many species. These localized extinctions and reduction in population sizes undermine the ability of species to evolve and adapt to changing environments as a result of genetic erosion. The genetic consequences of the widespread reduction of population sizes as a result of social strife in sub-Saharan Africa are not well documented. Here we review past molecular genetic data that are relevant to understanding of the genetic effects of war and social strife on Africa's wildlife. Uganda was probably one of the worst affected countries. Before 1972, Uganda had large herds and a variety of mammals. However, following the breakdown of law and order, some large mammals were exterminated while other populations were decimated. Recent results of genetic surveys in five large mammals in Uganda (the common warthog, savanna elephant, savanna buffalo, common hippopotamus and Uganda kob) suggest a substantial erosion of genetic diversity in the elephants and warthogs of Queen Elizabeth National Park. Although the rest of the studied mammals show no direct loss of genetic diversity, strong genetic differentiation was observed among most populations separated by even short geographical distances, indicating an increase in the 'between' component of genetic diversity that could have been accelerated by genetic erosion due to decrease in population sizes.

Taxonomic, morphological, biogeographic, and evolutionary studies

1. Peischl T, K. A., Melchinger-Wild E, Geldermann H. 2005. . 2005 Jun and 36(3):244-7. (2005). "Nine porcine microsatellite loci tested for size homoplasy in genetically diverse breeds." Animal Genetics February **36**(3): 244-247.

Abstract: Kind and probability of homoplasy across allelic microsatellite fragments can be investigated using DNA of genetically diverse pig breeds. In this study, nine microsatellite loci (SW1897, SW2427, SW489, SW957, TNFB, IFNG, SW2410, SW2019 and S0215) were analysed using DNA samples of pigs from Vietnam (Indigenous breeds Co, Meo, Muong Khuong, Tap Na) and Germany (European Wild Boar, Pietrain). In a total of 39 sequences, 20 differences within isomorphic alleles were observed in comparison with the respective reference sequences. They affected five of the nine tested microsatellite loci. The majority (18) of SNPs occurred in the 5'-flanking regions of the microsatellite repeats, 10 were found in the 3'-flanking regions and only one SNP occurred within the repeat of the Wild Boar sequence of SW2427. The compound microsatellites IFNG and S0215 were unaffected by size homoplasy (SH) within our material. We conclude that the fragment length analysis of microsatellites is a reliable tool for intraspecific phylogenetic studies because SH rates within a species were low.

2. Larson, G., K. Dobney, et al. (2005). "Worldwide Phylogeography of Wild Boar Reveals Multiple Centers of Pig Domestication." Science Mars Express: Mapping With OMEGA. March **307**(5715): 1618-1621.

Abstract: Mitochondrial DNA (mtDNA) sequences from 686 wild and domestic pig specimens place the origin of wild boar in island Southeast Asia (ISEA), where they dispersed across Eurasia. Previous morphological and genetic evidence suggested pig domestication took place in a limited number of locations (principally the Near East and Far East). In contrast, new genetic data reveal multiple centers of domestication across Eurasia and that European, rather than Near Eastern, wild boar are the principal source of modern European domestic pigs.

3. Fan, B., J. Gongora, et al. (2005). "Population genetic variability and origin of Auckland Island feral pigs" Journal of the Royal Society of New Zealand **35**(3): 279-285.

Abstract: Genetic variability of pigs isolated on the remote Auckland Islands of New Zealand was examined using 26 microsatellites recommended by the International Society for Animal Genetics (ISAG) and the Food and Agriculture Organisation (FAO) for porcine biodiversity analysis. The diversity indices, including observed and effective numbers of alleles, and observed and expected heterozygosity, revealed that Auckland Island pigs have a low level of genetic variability compared with European, Asian, Middle American indigenous and commercial pigs, as would be expected for a small population isolated for up to 200 years. Phylogenetic analyses of microsatellite data suggest that Auckland Island feral pigs are more related to European pigs than Chinese pigs, consistent with mitochondrial control region sequence analyses. In addition, the UPGMA topology based on microsatellite allele sharing measures showed that genotypes alone could accurately assign all Auckland Island pigs to their correct population, and also that two distinct Auckland Island subpopulations could be recognised.

Veterinary studies

1. Oliveira, J. C. D. C., R. (2005). "A systematic study of brain base arteries in the wild boar (*Sus scrofa scrofa*)" Anatomia Histologia Embryologia **34**(4): 232-239.

Abstract: This study aimed at describing and systematizing the arteries of the base of the brain of the wild boar (*Sus scrofa scrofa*). Thirty-three heads were used, of which 30 were injected with latex, and three with acrylic dental resin through the common carotid arteries. The brain carotid artery arose from the rostral epidural rete mirabile, and divided into a rostral and a caudal branch. The rostral branch gave off the middle cerebral artery and then continued as rostral cerebral artery. The latter branched into lateral rhinal, internal ethmoidal and medial rhinal arteries. The rostral cerebral artery joined its contralateral homologue, becoming the single rostral inter-hemispheric artery. The caudal branch emitted the caudal cerebral artery and the tectal arteries, and then fused with the branch of the opposite antimerere, joining the basilar artery. The rostral cerebellar arteries derived from this point. The basilar artery originated from the anastomosis between the arteries derived from the caudal epidural rete mirabile of each antimerere. The basilar artery extended rostrally, giving off as main collateral branch the caudal cerebellar artery. The basilar artery presented a significant decrease in diameter before joining the caudal branches of the brain carotid arteries. The cerebral arterial circle was rostrally and caudally closed.

2. Mayor, P., F. Lopez-Gatius, et al. (2005). "Integrating ultrasonography within the reproductive management of the collared peccary (*Tayassu tajacu*)" Theriogenology **63**(7): 1832-1843.

Abstract: Ultrasound imaging has been used to elucidate certain aspects of the reproductive biology of wild or endangered species. However, to our knowledge, this tool has not been used for reproductive monitoring of the collared peccary (*Tayassu tajacu*). In this study, real-time ultrasonography was used in 16 collared peccary females to diagnose early pregnancy status and predict gestational age. Based on the detection of an embryo, the earliest pregnancy diagnosis was made on Day 18 after mating, with the mean time needed for diagnosis being 22 days. Overall accuracies on Days 22, 26 and 28 were 56, 93, and 100%, respectively. On Days 26 and 28, all pregnancy and non-pregnancy diagnoses, respectively, were correct. The fetal measurements that best correlated with gestational age were crown-rump-length (CRL) and the length and diameter of the thorax. CRL was considered the most practical measurement because, contrary to thoracic fetometry, it could be determined when the embryo was first detected. Our findings revealed real-time ultrasound scanning to be a very accurate method for early pregnancy diagnosis and prediction of gestational age in the collared peccary.

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The newsletter of the IUCN/SSC Pigs, Peccaries and Hippos Specialist Group (previously Asian Wild Pig News)

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The IUCN/SSC Pigs, Peccaries and Hippos Specialist Group PPHSG is one of several Specialist Groups of the Species Survival Commission (SSC) developed by the IUCN to foster conservation, research and dissemination of information for species of conservation concern.

It consists of a group of technical experts focusing on the conservation and management of wild pigs, peccaries and hippos.

The broad aim of the PPHSG is to promote the long-term conservation of wild pigs, peccaries and hippos and, where possible, the recovery of their populations to viable levels.

Pigs, peccaries and hippopotamuses are non-ruminant ungulates belonging to the Suborder Suiformes of the Order Artiodactyla (the even-toed ungulates).

Within the Suborder Suiformes, pigs belong to the Family Suidae, peccaries to the Family Dicotylidae and hippopotamuses to the Family Hippopotamidae.

This newsletter is electronically available at: <http://iucn.org/themes/ssc/sgs/pphsg/home.htm>