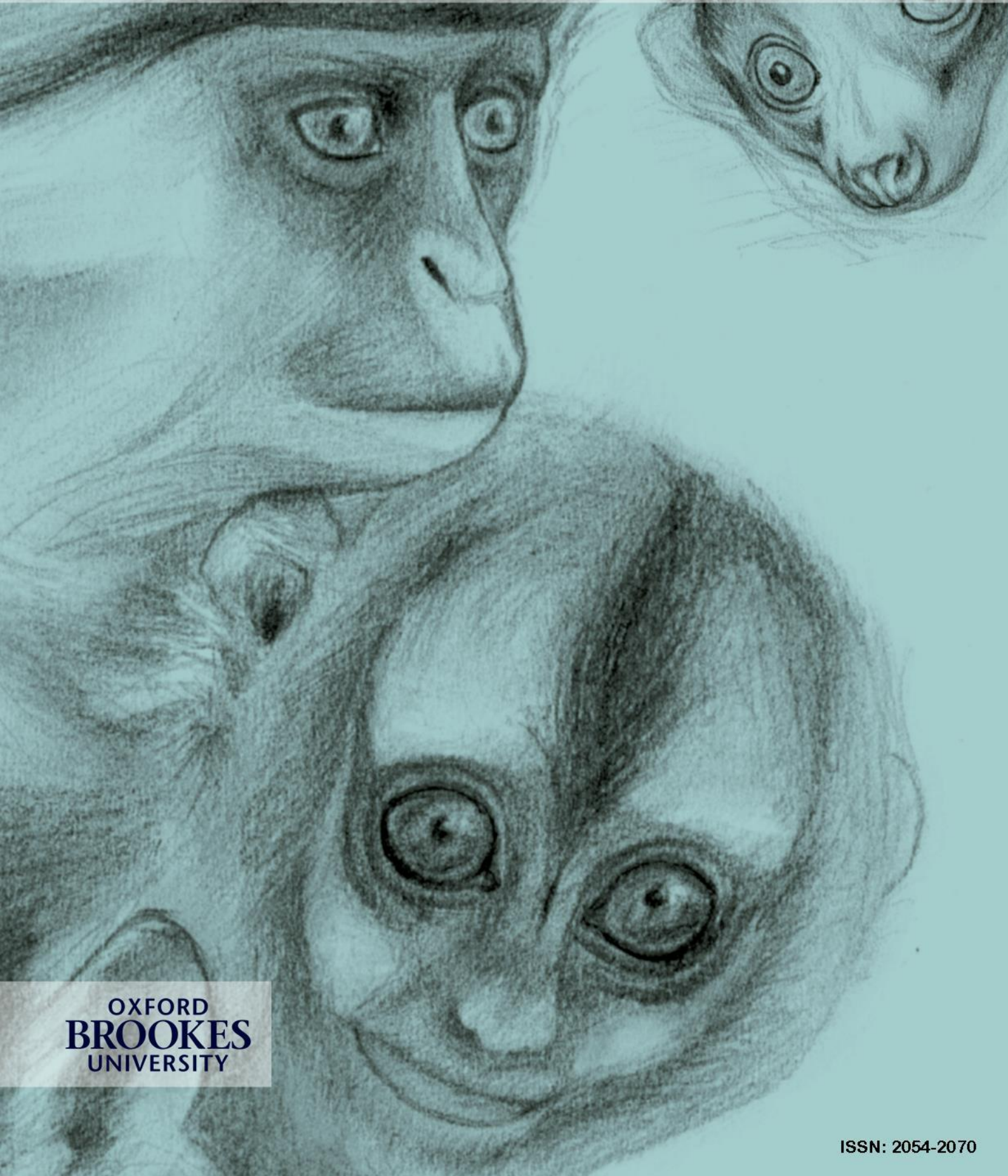


Canopy

Journal of the MSc in Primate Conservation

Volume 16
Issue 2
Spring 2016



OXFORD
BROOKES
UNIVERSITY

ISSN: 2054-2070

Canopy

Journal of the Primate Conservation
MSc Programme
Oxford Brookes University

Editors

Nicholas James (Australia)
Claire Cardinal (England)
Hayley Oliver (England)

Editor in Chief

Magdalena Svensson (Sweden)

Address

Canopy c/o Vincent Nijman
Faculty of Humanities and Social Sciences
Oxford Brookes University
Oxford
OX3 0BP
UK

Website

MSc Primate Conservation:
www.brookes.ac.uk/primates

Front Cover Design

Hellen Bersacola (Switzerland)
hellenbers@gmail.com

Table of contents

Letter from the Editors	2
Letter from the Module Leader	3
Introduction of cross disciplinary methodologies to traditional conservation education studies – An example from the United Kingdom	4
Using arrays of listening posts to determine the density of a population of yellow-cheeked crested gibbons in an audial survey in Mondulkiri Province, Cambodia; A methodological review	7
The effects of provisioning on a troop of Chacma Baboons (<i>Papio ursinus</i>) at a tourist lodge in the Okavango Delta, Botswana	12
Local attitudes toward mountain gorilla (<i>Gorilla beringei beringei</i>) conservation in Ruhija sector, Bwindi Impenetrable National Park, Uganda	16
Do our perceptions change from before to after a primate walk-through enclosure experience?	20
Studying human-animal relationships in a zoo environment	23
Human wildlife interactions - Primates as pets	26
University Events	28

Letter from the Editors

Welcome to the spring 2016 edition of Canopy, the in-house journal of the MSc in Primate Conservation at Oxford Brookes University.

In many primate range countries, rapid expansion of human populations and the growth in infrastructure and tourism as they develop their economies brings people closer to primates than ever before. Interactions at this interface are often portrayed as conflict between people and “problem primates”. But the situation is rarely that simple. Primates may be attracted to humanised environments for a ready food source or because forest fragmentation brings people into their habitat. In developing conservation programmes, it is vital to understand the nature of this interface and how local people perceive and interact with primates.

Social media is bringing primates closer to people in western homes as well. Images of cute primates fuel people’s desire to have one and sadly the internet makes it possible for anyone in the UK to buy a marmoset or lemur with ease. We hope that this Year of the Monkey will see the UK government follow the lead of other enlightened countries in adopting a ban on keeping primates as pets.

For this edition we have selected articles which focus on the interactions between humans and primates and methods for studying and monitoring them. These articles have been prepared by past MSc students whose research explores the growing cross-over between the fields of primatology and anthropology. We hope you enjoy exploring with them.

Best wishes,
the Editors

Nicholas and Claire
(Hayley and Magdalena not pictured)



Letter from the Module Leader

The core of good primatology is keen observation and sound data collection. But primate conservationists no longer use only pencil and paper. With the rapid advances in technologies and new analytical techniques and the spread of social media, we are dared to expand our knowledge and methods to meet conservation challenges. Technologies which were developed for other purposes are now being used by primate conservationists to help understand and protect primates including camera traps, Global Information Systems for mapping, drones and remote acoustic monitors to name but a few.



The need to include humans in the primate conservation discussion is increasingly receiving much needed attention for research as is working with colleagues from different disciplines to pool our knowledge. Multi-disciplinary work is essential to learn from work being done in other areas and to see where we primate conservationists can apply this to the problems we face. Adapting established analytical tools and methods used on other species to solve primate density problems is one example. The internet has proved to be devastating in facilitating the sale of primates as pets, but it is also a tool we can use to tackle this problem with innovative campaigns and research.

Our work can equally apply to conservationists working with other species, highlighting the need to collaborate and share our knowledge and findings through publications and across social media and using this to help shape policy.

Primates are facing their greatest threats through expanding infrastructure, habitat loss, hunting, disease, human encroachment and many other issues. With primate conservationists broadening their knowledge, working across disciplines, relaying findings and embracing new methods there is still hope.

Dr Susan M Cheyne

Module Leader, MSc Primate Conservation

Introduction of cross disciplinary methodologies to traditional conservation education studies – An example from the United Kingdom

Kim Feddema

Cohort 14/15

feddema.kim@gmail.com

From July-September 2015 I conducted a study to explore the perceptions of adolescent teenagers regarding primate welfare and suitability for the pet trade as influenced by social media content (Jacobson, 2010; Nekaris *et al.*, 2013). I first presented students with videos which had gone viral on the video sharing website 'YouTube'. I then conducted questionnaires and interviews to explore their perceptions and knowledge regarding these videos, social media and the environment, as well as obtaining demographic and cultural information about the students themselves. Finally, I presented students with a lesson on the primate pet trade and gave them the opportunity to ask questions and discuss the subjects covered. In order to fully explore these topics I drew upon methodologies that are commonly implemented in anthropology, advertising and ecology. This was completed with the aim of improving conservation education for this age group and to determine the role of social media as a competitor for students' attention, education and trust.

The addition of new methodologies allowed me to significantly increase the power of my analysis and the utility of my project for the development of conservation education

practice. I strongly support the continued integration of cross-disciplinary techniques into the field of conservation to strengthen the validity of our studies and to widen the potential datasets we obtain. The introduction of cross-disciplinary techniques is a fundamental way of improving analysis and strengthening and expanding any field of research. This is of particular importance in the field of conservation, which is growing rapidly as the number of species threatened with extinction increases (Cox, 2007).

Data collection took place in three schools, Applecross Senior High School, Cheney School and Oxford Spires Academy. A series of videos containing images of animals, all of which had gone 'viral' on YouTube and amassed a considerable number of views, were presented to the students. After this, students were asked to complete two short questionnaires, one containing yes/no style questions and one containing questions in a Likert scale. These were designed to ascertain students' understanding and use of the internet and social media as well as their general knowledge of animals and their environmental beliefs. Finally, students were led in a free-listing interview, in which they were asked questions regarding the content in

the videos they had seen as well as to determine students' interests and personality characteristics. Free-listing interviews require students to respond to questions with all possible answers, creating a list of responses for each question that are assumed to follow a natural hierarchy, where the first answer is weighted more strongly than each subsequent response.

Method 1: Diversity Indices

While diversity indices have long been used in conservation studies they have traditionally been used to analyse ecological data, such as the diversity of species in a given area (Spellerberg & Fedor, 2003). In this study I adapted these formulae to determine the diversity of words provided in free-listing interviews. Students were asked ten questions and for each they were told to provide a complete list of possible answers to these questions. As an example, they were asked to note down all video games that they play. The use of diversity measurements allowed us to determine the overall evenness of the responses for each question, to examine inter and intra-school differences among the diversity of responses and the turnover rate of responses between groups.

I chose to use multiple indices (the Shannon-Wiener Index, Alpha, Beta and Gamma diversity and Simpson's Evenness) as there has, as yet, been no consensus among researchers as to which provides the most accurate or appropriate result for any given

hypothesis. I therefore chose the most generally accepted and widely used indices. The Shannon-Wiener Index (H') is perhaps the most commonly used measure of species diversity and is calculated using the formula given below:

$$H = -\sum_{i=1}^n p_i \ln p_i$$

Where n is the total number of responses and p_i is the proportion of n made up by the i th word.

This formula allows diversity to be calculated in the context of the sample size, lending itself to free-listing datasets where list length can be highly variable between questions.

Alpha (α), Beta (β) and Gamma (γ) diversity are typically used together as one 'set' of diversity measures for varying levels of a given dataset. Alpha diversity is calculated as the number of 'species' (in this case words) in a single sample, Gamma diversity, also known as 'landscape' diversity, as the total number of species across the total group (in this case schools) and Beta diversity, the rate of turnover between the groups ($\beta = \gamma/\alpha$) (Schofield *et al.*, 2012).

Finally, I consulted a paper by Smith and Wilson (1996), who conducted a review of evenness scores and from this I determined that William's (1964) adaptation of the Simpson's diversity equation best suited my dataset.

The equation, as written below, calculates the relative abundances of words in the dataset to differentiate between lists which have several common responses and those which have one common response and several which are rare.

$$E_{1/D} = \frac{1/D}{S}$$

Where E is the evenness score; 1/D is Simpson's reciprocal index and S is the number of responses

Method 2: Advertising: Psychographic Segmentation

As the pet trade is a commercial process it is useful to consider the marketing and advertising strategies and techniques employed in that sector, as they may be useful in research. For this study, I used psychographic segmentation, whereby subjects are divided into demographic, behavioural, attitudinal and aspirational variables to create a cultural profile of a target audience or consumer (Gilbert & Warren, 1995). In the social sciences, this is also referred to as a 'cultural consensus' and is typically used as a method of exploring potential cultural factors, which explain or define ideologies and practices (Barber *et al.*, 2012). In this study I demonstrated this technique by determining whether a student's hobbies, use of the internet and social media or their general environmental attitude, as determined by their answers to the

questionnaires, would affect their responses to the videos they were presented.

Students were asked to write down their emotional responses to videos as well as to answer questions about content designed to determine perception differences and these were analysed in a generalised linear model to determine any significant effects. I hope that by including this technique its value and potential applications will be better understood and may perhaps be more frequently employed in studies which aim to examine the complexities of the pet trade and/or the impact of online or educational content on students.

The inclusion of methodologies from outside of your given field is an important step in improving data analysis and widening the potential applications of research. In my study I demonstrated the adaptation and use of two methodologies in a conservation education research project. Both methodologies added significant results to my research and allowed me to answer a wider range of questions with my dataset. I therefore strongly recommend their continued integration into the discipline.

REFERENCES

- Barber N, Kuo P, Bishop M, Jr R (2012). Measuring psychographics to assess purchase intention and willingness to pay. *Journal of Consumer Marketing*, 29: 280–292.
- Cox R (2007). Nature's "crisis disciplines": Does environmental communication have an ethical duty? *Environmental Communication*, 1: 5-20.

Gilbert FW & Warren WE (1995). Psychographic constructs and demographic segments. *Psychology & Marketing*, 12:223–237.

Jacobson SK (2010). Effective primate conservation education: Gaps and opportunities. *American Journal of Primatology*, 72:414–419.

Nekaris BKAI, Campbell N, Coggins TG, Rode EJ & Nijman V (2013). Tickled to death: analysing public perceptions of “cute” videos of Threatened species (slow lorises - *Nycticebus* spp.) on Web 2.0 Sites. *PLoS ONE*, 8:1–10

Scofield D, Smouse P, Karubian J & Sork V (2012). Use of alpha, beta and gamma diversity measures

to characterise seed dispersal by animals. *The American naturalist*, 180:719–732.

Spellerberg IF & Fedor PJ (2003). A tribute to Claude-Shannon (1916–2001) and a plea for more rigorous use of species richness, species diversity and the “Shannon-Wiener” Index. *Global Ecology and Biogeography*, 12:177–179.

Smith B & Wilson J (1996). A consumer’s guide to evenness indices. *Oikos*, 76: 70–82

Williams C (1964). *Patterns in the balance of nature*. London: Academic Press.

Using arrays of listening posts to determine the density of a population of yellow-cheeked crested gibbons in an audial survey in Mondulkiri Province, Cambodia; A methodological review

Sharon McCabe

Cohort 14/15

sharoncjmccabe@gmail.com

New techniques in the world of conservation are constantly being tested in an effort to improve the accuracy of wildlife population monitoring. Effective survey and census methods are crucial to gauging the progress of conservation projects. Yet, elusive species, such as members of the Hylobatidae family, present a challenge in this respect as traditional visual census and survey methods are often ineffective. Gibbons in particular have proven highly difficult to survey as they are not only able to flee silently, often before being detected by observers, but they are also extremely arboreal, residing in the upper levels of forest canopies and rarely, if ever, descending to the ground. Therefore,

previous efforts to survey gibbons have been fraught with uncertainties and researchers are now begin to re-examine the methods that have been the standard for gibbon surveys for over 20 years.

There are several methods for performing gibbon surveys that have been in regular use with the two most common being visual detection from line transects and audial listening post surveys that use gibbons' vocalisations to determine group locations (Brockelman & Srikosamatara, 1993; Rawson et al., 2008; Long *et al.*, 2011; Timmins & Duckworth, 2013). Following the data collection phase, researchers must then

determine which method of data analysis among the many (occupancy modelling, distance sampling, triangulation, etc.) is best suited to their data. This article will not focus on the extensive matter that is the merit of these various analysis techniques, but will rather, through a case study, examine the effectiveness of one of the most common survey methods used for gibbon research: acoustic triangulation using listening posts.

Acoustic triangulation can be used on any vocal species, such as bitterns (Lefebvre & Poulin, 2003), Balsas screech owls (Alba-Zuniga *et al.*, 2009), mantled howler monkeys (Papworth & Mejia, 2015) and Andean titi monkeys (Aldrich *et al.*, 2008). However it is especially well-suited to gibbons, often called the most accurate survey method (Gilhooly & Cheyne, 2012) thanks to their highly predictable and resounding vocalizations. All species of gibbons produce distinct “songs” as a form of territoriality in the morning which can be used to determine their locations. Brockelman and Ali (1987) first established guidelines for these surveys involving arrays of listening posts (typically one to four posts per array) arranged within a survey area. Posts should be placed 300-500 m apart in either a linear, triangular or square formation, depending on individual survey design (Duckworth *et al.*, 1995). Listening posts must be placed close enough to one another so that multiple posts may detect the same group, but far enough apart to have

reasonably varying bearing estimates and thus facilitate the triangulation process (Kidney *et al.*, 2013). Each listening post is occupied by an observer who records the distance and bearing of all gibbon calls heard during the survey times. As gibbon groups do not call each day, it is recommended that researchers spend more than one day recording detections at each array (typically one to five days) in order to ensure detection of all groups within the area (Hamard *et al.*, 2010; Phoonjampa *et al.*, 2011). Once all days have been completed at a site, the process of concurrent mapping is used in order to determine group locations.

After data collection each day, detected calls are mapped. Each detection is represented by a line drawn stemming out from the appropriate listening post in the direction of the recorded compass bearing and 1.5 times the length of the estimated distance (in order to ensure intersection of corresponding detection lines in cases of underestimation of distance). Predicted gibbon group locations are plotted each day at the intersection of detection lines, provided that their accompanying calling times correspond (only intersections of lines representing calls heard at the same time can indicate a gibbon group). This process is repeated after each survey day in an area. Figure 1 provides an example of this process using Google Earth Pro.

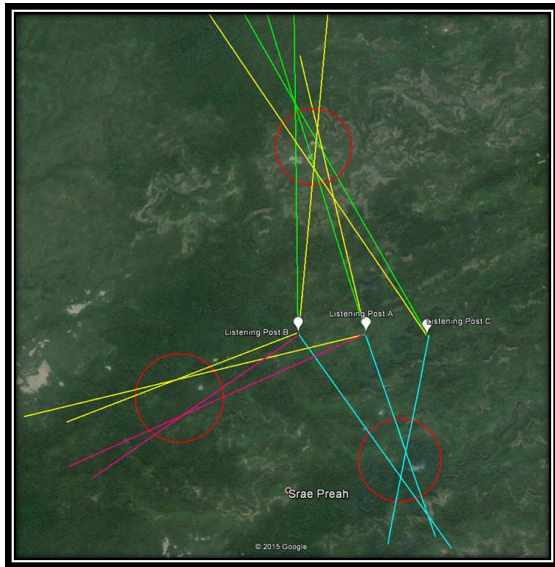


Figure 1 An example of the concurrent mapping process for a sample array of three listening posts.

Lines stemming from posts represent individual detections of gibbon calls reaching in the direction of the researchers' estimated compass bearings.

Each color represents a different day of observations (day 1- yellow, day 2 – green, day 3- pink and day 4-blue). Red circles represent the estimated location of gibbon groups based on the intersection of detection lines (assuming that those lines also represented calls heard within similar time frames).

An audial survey was performed in Seima Protected Forest, Mondulkiri Province, Cambodia (Fig. 2) on a population of yellow-cheeked crested gibbons (*Nomascus gabriellae*). Data collection took place from May 7-July 4th, 2015. For this project, a linear design of three listening posts per array was used with a distance of 300 m between listening posts. This distance was deemed ideal as it would allow posts to be far enough apart to provide effective triangulation of

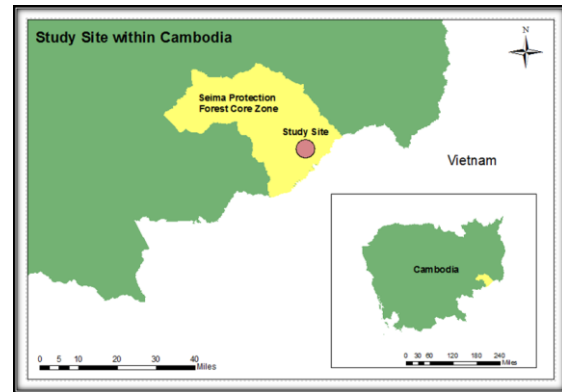


Figure 2 – The Seima Protected Forest Core Zone (yellow) is located in the southeastern corner of Cambodia (Green) with the study site for this project within the Core Zone highlighted in red.

detections but also close enough for multiple posts to hear calls from a single group in this environment. A total of 17 arrays were surveyed. Four consecutive days were spent at 13 arrays and three consecutive days were spent at four arrays. Two research assistants were placed at each listening post in order to reduce human error in bearing and distance estimations (a total of six researchers per array). On each survey occasion, when an *N. gabriellae* call was heard, the following information was recorded: call start time, call end time, number of “singers” (solo, duet or more than two adults), estimated distance of calls (to the nearest 100 m) and compass bearing of the call. All researchers were in position and ready to record detections by 4:30am each day and data collection continued until either 8:00 am or until no calls were heard for 45 consecutive minutes (Cheyne, 2008; Hamard *et al.*, 2010) to reduce the detections of recalls within the same day.

While a robust data set was obtained from this listening post survey, the process of the method itself presented several difficulties. The most fundamental limitation proved to be placing listening posts in their pre-generated locations. The study site consisted of extremely mountainous terrain with steep drop offs common throughout the area and few trails through the thick undergrowth of the forest.

There was a fair amount of bias in this case study, not only during data collection when each “detection” required a subjective decision regarding the bearing on the part of the research assistants, but also during the process of cumulative mapping itself, which is inherently wrought with uncertainties. Based on the error-prone nature of the bearing estimation, quite often detection lines would not intersect, though time stamps coincided indicating the simultaneous detection of a single group. Therefore, a compromise between the estimated bearings was made and the best fit location was chosen. This problem was only exacerbated across survey days at a single site as researchers were forced to make subjective decisions when mapping detections across survey days in order to determine whether detections coming from the same general area on separate days belong to a single group moving within its home-range or two groups in neighboring home-ranges. It is almost certain

that there was a margin of error of at least ± 2 groups per array.

A key assumption of the triangulation process is that listening posts are placed randomly within an animal's range (Brockelman & Srikosamatra, 1993; Rawson, 2010), yet in gibbon surveys this is often not possible due to the thick undergrowth characteristic of most optimal gibbon habitat (Rawson, 2010) or not ideal when determining preferred locations for detecting gibbon calls (in sparsely vegetated, highly elevated areas). It is crucial for researchers to remember that while points may easily be placed on a map randomly, in reality, chances are that those points will not be easily accessible (if at all). A completely random placement, while a critical assumption of the method, is most often not possible.

The inherent bias of subjective bearing decisions on the part of the research assistants was substantial as many calls were at distances of greater than 500 m. The greater the distance of the call, the more difficult bearing estimation becomes and the higher the potential margin of error as well. A misreading of 10 degrees will lead to a relatively small difference in location when the calling distance is only 200 m away. However, an error of 10 degrees at a distance of 800 m produces a much larger difference in location.

Despite the complications demonstrated in this study, I believe that acoustic surveys are still an effective method for surveying vocal species. Researchers must simply recognize their limitations. This case study found the method appropriate for determining abundance and density yet ineffective for determining home-ranges and group locations as the greatest margin of error involved determining precise locations. Future replications of studies such as this should be carried out by experienced researchers who possess a strong knowledge of the study area and may be able to strike a balance between randomly selected yet accessible listening post locations. With those assumptions being met and the limitations outlined in this methodological review kept in mind, acoustic surveys represent an effective tool in the determination of the density of vocal species.

REFERENCES

- Alba-Zúñiga A, Enríquez PL & Rangel-Salazar JL (2009). Population density and habitat use of the threatened Balsas screech owl in the Sierra de Huautla Biosphere Reserve, Mexico. *Endangered Species Research*, 9(1): 61-66.
- Aldrich BC, Molleson L & Nekaris KAI (2008). Vocalizations as a conservation tool: an auditory survey of the Andean titi monkey *Callicebus oenanthe* Thomas, 1924 (Mammalia: Primates: Pitheciidae) at Tarangue, Northern Peru. *Contributions to Zoology*, 77: 1-6.
- Brockelman WY & Ali R (1987). Method of surveying and sampling forest primate populations. In: Marsh CW & Mittermeier RA (Eds.). *Primate Conservation in the Tropical Rainforest*. New York: Alan R. Liss. pp. 23-62.
- Brockelman WY & Srikosamatara S (1993). Estimation of density of gibbon groups by use of loud songs. *American Journal of Primatology*, 29: 93-108.
- Cheyne SM (2008). Effects of meteorology, astronomical variables, location and human disturbance on the singing apes: *Hylobates albibarbis*. *American Journal of Primatology*, 70: 386-392.
- Duckworth JW, Timmins R, Anderson GQA, et al. (1995). Notes on the status and conservation of the gibbon *Hylobates (Nomascus) gabriellae* in Laos. *Tropical Biodiversity*, 3(1): 15-27.
- Gilhooly LJ & Cheyne SM (2012). *Standard operating procedures for carrying out population density surveys for gibbons*. Palangka Raya, Indonesia: Orangutan Tropical Peatland Project Report.
- Hamard M, Cheyne SM & Nijman V (2010). Vegetation correlates of gibbon density in the peat-swamp forest of the Sabangau Catchment, Central Kalimantan, Indonesia. *American Journal of Primatology*, 72: 607-616.
- Kidney D, Rawson BM, Borchers DL, et al. (2013). *An efficient acoustic density estimation method with human detectors, applied to gibbons in Cambodia*. October 10, 2013.
- Lefebvre G & Poulin B (2003). Accuracy of bittern location by acoustic triangulation. *Journal of Field Ornithology*, 74(3): 305-311.
- Long HT, Tam NA, Minh HT, Tinh NT & Tuan BV (2011). *Survey of the northern buff-cheeked crested gibbon (Nomascus annamensis) in Kon Ka Kinh National Park, Gia Lai Province, Vietnam*. Hanoi, Vietnam: Fauna & Flora International/Conservation International.
- Papworth S & Mejia M (2015). Population density of Ecuadorian mantled howler monkeys (*Alouatta palliata aequatorialis*) in a tropical dry forest, with information on habitat selection, calling behavior and cluster sizes. *Studies on Neotropical Fauna and Environment*, 50(2): 65-72.
- Phoonjampa R, Koenig A, Brockelman WY, et al. (2011). Pileated gibbon density in relation to habitat characteristics and post-logging forest recovery. *Biotropica*, 43(5): 619-627.
- Rawson B (2010). The use and abuse of gibbon survey techniques: shortcomings of auditory survey techniques. In: Nadler T, Rawson B & Thinh VN (Eds.) *Conservation of Primates in Indochina*. Frankfurt Zoological Society, Conservation International, pp. 253-258.
- Rawson B, Clements TJ & Nut MH (2008). Status and conservation of yellow-cheeked crested gibbons in Seima Biodiversity Conservation Area, Mondulkiri Province, Cambodia. In: Lappan S & Whitaker DM (Eds.): *The gibbons: new perspectives on small ape socioecology and population biology*. New York: Springer. pp. 387-408.
- Timmins RJ & Duckworth JW (2013). *A survey of gibbons and other wildlife in the Bokeo section of Nam Kan National Protected Area, Lao PDR*. Cambridge: Fauna & Flora International.

The effects of provisioning on a troop of Chacma Baboons (*Papio ursinus*) at a tourist lodge in the Okavango Delta, Botswana

Amanda Harwood

Cohort 13/14

amandaclaireharwood@gmail.com

The Okavango Delta in Botswana is one of the world's greatest biodiversity hotspots and is home to some of the largest estimates of large mammals and birds (Gutteridge & Reumerman, 2013), as well as being designated as a UNESCO World Heritage Site (UNESCO, 2014). Botswana's wildlife-based tourism is the second highest contributor to the country's GDP (Barnes, 1996). 90% of wildlife-based tourism in Botswana takes place in the northern Okavango-Chobe region (Magole & Gojamang, 2005), with over 50,000 tourists visiting the Okavango Delta region annually (Mbaiwa, 2003). As the demand for wildlife-based tourism grows, facilities associated with it, such as campsites, roads, and lodges, also increase, leading to modifications to animals' natural habitats (Curtin, 2009).

The rise in tourism and tourist facilities has created a new human-primate interface. Primates are well-known problem species around tourist lodges, with most research done on baboons and vervets living near lodges in Kenya (Brennan *et al.*, 1985). Primates in lodge habitats do not face the same environmental

and ecological pressures from seasonal variations in food, water, and predation as their more wild counterparts (Brennan *et al.*, 1985). This is most often attributed to the actions of both active and passive provisioning, which is the offer of food by people beyond the natural supply and/or quality of the target animal's environment (Fa, 1991). The effects of provisioning on primates and baboons have been well documented, as food availability is the apex factor in determining an animal's activity budget (Orams, 2002). Provisioned or semi-provisioned primates show a decrease in feeding time, a decrease in travelling time and distance, a decrease in use of natural resources, such as sleeping sites, increases in grooming and resting times, and an increase in aggression (baboons: Forthman Quick, 1986; Altmann & Muruthi, 1988; Strum, 2010; macaques: Seth & Seth, 1986; Fa, 1991; chimpanzees: Wrangham, 1974; vervets: Brennan *et al.*, 1985).

This study took place at Oddball's Camp, part of Lodges of Botswana, situated on the Boro channel, one of the main channels of the Okavango Delta.

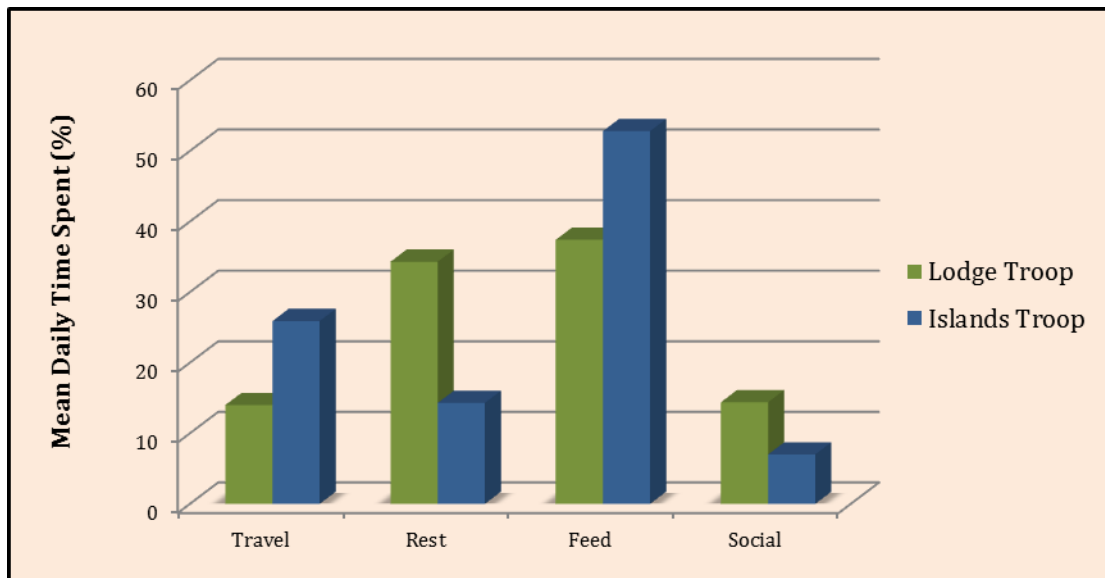


Figure 1. Activity budgets of the Lodge Troop and Islands Troop baboons

Two troops were observed May - June 2014 on neighboring islands of the same ecology. One troop, the Lodge Troop, lived on the same island as Oddball's Camp and was semi-provisioned by the lodge's waste dumpsite. The other, Islands Troop, utilized resources on adjacent islands with no human presence. During all day follows of the baboons, instantaneous scan samples were recorded, identifying age and sex class, behavior, and feeding substrate (Martin & Bateson, 2007). Daily route and route length were also recorded.

Data were analyzed using SPSS, using Mann-Whitney *U*-tests to test between differences in time spent travelling, feeding, resting, and engaging in social activities, including playing,

grooming, copulating, and showing aggression to gauge activity budgets. Behaviors were also compared across times of day. For the Lodge Troop, differences in feeding behavior, and use of their home range were calculated. Daily route lengths were calculated using Garmin BaseCamp and statistically tested using a Paired Samples *t*-test in SPSS.

Data analysis showed that activity budgets of the Lodge Troop and Islands Troop varied significantly across all behaviors. The Lodge baboons spent significantly less time travelling, more time resting, less time feeding, and more time socializing than did the Islands Troop (Fig. 1). For social activities, the Lodge Troop played, groomed, and behaved aggressively more than the Islands Troop, but showed no significant

difference in time spent copulating. Overall activity budgets were the same when looking at sex classes and age classes as well as across the time of day. The daily route lengths of the Lodge Troop were significantly shorter than those of the Islands Troop. The Lodge Troop had an average daily route length of 1.2km whereas the Islands Troop travelled an average of 4.1km. Additionally, the Lodge Troop used only one sleeping site while the Islands Troop utilized five. The Lodge Troop also spent most of their time at five human-modified areas, most notably, the waste dumpsite.

The results found in this study are complimentary to the ones found in previous studies of provisioned primates' activity budgets. Activity budgets and habitat use is dictated by the resources available within it, namely food availability and its distribution in space and time (Oates, 1987). The Lodge Troop spent most of their time at the waste dumpsite, gaining valuable calories in a short amount of

time, leaving other time for 'leisure' activities such as resting and grooming. Aggression is often the most notable of increased behaviors of provisioned primates. This increase in aggression can also bleed into human-primate interactions. It has been well documented that primates can become increasingly aggressive towards people once they associate them with being a source of food, which may lead to injury or disease transmission (Priston & McLennon, 2013). This has been seen in vervets (Brennan *et al.*, 1985), macaques (Fa, 1991; Aggimarangsee, 1992), chimpanzees (Wrangham, 1974), and baboons (Kaplan *et al.*, 2011). Conflicts such as this can often lead to the lethal removal of an animal species.

From these data, various management recommendations were made to the lodge management including better ways to dispose of their waste, and ways to avoid interactions with the baboons by both lodge staff and foreign tourists.

REFERENCES

- Aggimarangsee N (1992). Survey for semi-tame colonies of macaques in Thailand. *Natural History Bulletin of the Siam Society*, 40:103-166.
- Altmann J & Muruthi P (1988). Differences in daily life between semiprovisioned and wild-feeding baboons. *American Journal of Primatology*, 15:213-221.
- Barnes JL (1996). Economic characteristics of the demand for wildlife-viewing tourism in Botswana. *Development Southern Africa*, 13(3):377-397.
- Brennan EJ, Else JG & Altmann J (1985). Ecology and behaviour of a pest primate: vervet monkeys in a tourist-lodge habitat. *African Journal of Ecology*, 23:35-44.
- Curtin S (2009). Wildlife tourism: the intangible, psychological benefits of human-wildlife encounters. *Current Issues in Tourism*, 12(5-6):451-474.
- Fa JE. (1991) Provisioning of Barbary macaques on the Rock of Gibraltar. In: Box HO (Ed.) *Primate Responses to Environmental Change*. London: Chapman and Hill. pp. 155-165.

- Forthman Quick DL (1986). Activity budgets and the consumption of human food in two troops of baboons, *Papio anubis*, at Gilgil, Kenya. In Else JG & Lee PC (Eds.) *Primate Ecology and Conservation*. Cambridge: Cambridge University Press. pp. 221-228.
- Gutteridge L & Reumerman T (2013). *Okavango: Field Guide*. South Africa: Southbound Field Guides.
- Kaplan BS, O'Riain JM, van Eeden R & King AJ (2011). A low-cost manipulation of food resources reduces spatial overlap between baboons (*Papio ursinus*) and humans in conflict. *International Journal of Primatology*, 32(6):1397-1412.
- Magole LI & Gojamang O (2005). The dynamics of tourist visitation to national park and game reserves in Botswana. *Botswana Notes & Records*, 37:80-96.
- Martin P & Bateson P (2007). *Measuring behaviour: an introductory guide*. Cambridge: Cambridge University Press.
- Mbaiwa JE (2003). The socio-economic and environmental impacts of tourism development on the Okavango Delta, north-western Botswana. *Journal of Arid Environments*, 54:447-467.
- Oates JF (1987). Food distribution and foraging behavior. In: Smuts BB, Cheyney DL, Seyfarth RM, Wrangham RW & Struhsaker TT (Eds.) *Primate Societies*. Chicago: University of Chicago Press. pp. 197-209.
- Orams MB (2002). Feeding wildlife as a tourism attraction: a review of issues and impacts. *Tourism Management*, 23:281-293.
- Priston NEC & McLennan MR (2013). Managing humans, managing macaques: human-macaque conflict in Asia and Africa. In: Radhakrishna S, Huffman MA & Sinha A (Eds.) *The Macaque Connection: Cooperation and Conflict between Humans and Macaques*. New York: Springer. pp. 225-250.
- Seth PK & Seth S (1986). Ecology and Behavior of Rhesus Monkeys in India. In: Else JG & Lee PC (Eds.) *Primate Ecology and Conservation*. Cambridge: Cambridge University Press. pp. 89-103.
- Strum SC (2010). The development of primate raiding: implications for management and conservation. *International Journal of Primatology*, 31: 133-156.
- UNESCO (2014). *Okavango Delta*. [Online]. Available at: <http://whc.unesco.org/en/list/1432>, [Accessed 11 August, 2014].
- Wrangham RW (1974). Artificial feeding of chimpanzees and baboon in their natural habitat. *Animal Behavior*, 22:83-93.

Local attitudes toward mountain gorilla (*Gorilla beringei beringei*) conservation in Ruhija sector, Bwindi Impenetrable National Park, Uganda

Alexandra Lebron
Cohort 14/15
allylebron@gmail.com

The mountain gorillas of East-Central Africa (*Gorilla beringei beringei*) have remained listed as Critically Endangered on the IUCN Red List since 1996 (IUCN, 2015). Despite their protected status within the national parks of Uganda, Rwanda and the Democratic Republic of Congo, mountain gorillas continue to face significant anthropogenic threats ranging from illegal poaching and mining activities to increased human encroachment (Miles *et al.*, 2005; Junker *et al.*, 2012). Current population estimates suggest there are 880 mountain gorillas remaining (IUCN, 2015). Bwindi Impenetrable National Park (BINP and Bwindi hereafter) in Uganda, home to roughly half of the world's mountain gorillas, has seen much success in gorilla tourism as an economic driver of its conservation efforts.

However, tense relations between Park management and local communities still exist in many areas around BINP, threatening to destabilise the conservation progress it has made over the last two decades. For many residents who share land and resources with the gorillas, the economic benefits from tourism do not outweigh the costs of living near a protected area. Crop damage from

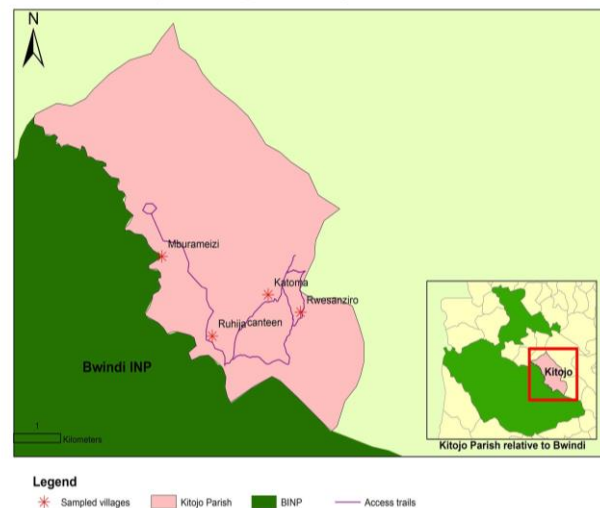


Figure 1: Map of the Kitojo Parish where interviews were carried out (map credit: Peter Kabano, ITFC)

protected animals, inequitable distribution of funds from tourism, and feelings of general exclusion or dismissal by Park authorities are some of the grievances expressed by community members in the past (Blomley, 2003; Namara, 2006; Aharikundira & Tweheyo, 2011; Baker *et al.*, 2012).

To assess the extent and possible causes of local acrimony at one of BINP's tourism sites, qualitative data were collected from four communities in Ruhija sector on the eastern edge of the Park (Fig. 1), where the sample size for each village was calculated as 5% of its



Figure 2: Field translator (left) collecting demographic data from a local participant during the pre-interview phase of the SSI.

population. During June - July 2015, 64 local residents from Ruhija-canteen, Mburameizi, Katoma and Rwesanziro were asked about their experiences and attitudes regarding Bwindi Impenetrable National Park and its mountain gorilla conservation efforts. The researcher employed semi-structured interviews to obtain fixed responses about positive, negative or neutral associations with BINP, which were supplemented by open questions (Fig. 2). Demographic information was also collected from participants to contextualise responses (Newing, 2010).

It was found that a mostly positive association with BINP existed among its neighbouring residents in Ruhija sector, with 61% of interviewed participants speaking favourably of the Park. Many attributed improved socioeconomic conditions for Park-edge communities in Kitojo Parish to the Park's growing ecotourism. Such feedback is representative of reduced tensions in the area, which have been facilitated by the

provision of economic alternatives to the historically extractive, commercial use of the Park's resources (Archabald & Naughton-Treves, 2001; Baker *et al.*, 2012). Interviewed residents discussed direct benefits from the Park such as employment opportunities and tourism revenue-sharing (TRS).

Fourteen percent of respondents expressed negative attitudes toward the Park and 25% were assumed (by the primary investigator) to have no opinion. This was understood as any individual who was unable to give a definitive response about his/her opinions about the conservation efforts at Bwindi. The reluctance of these participants to completely endorse the Park were primarily due to incidents of crop destruction by protected animals; general feelings of distrust toward Uganda Wildlife Authority and Park management; and problems with TRS.

There seemed to be patterns in responses according to certain demographic characteristics. The most positive perceptions of BINP and local wildlife conservation were among males, younger community members, more educated individuals, employed residents and those who lived within .5 km. of the Park boundary. In Ruhija sector, considerable overlap exists between these groups as they are not completely independent of each other. Studies concerning the geographical patterns of the costs and benefits accrued from living near a protected area have produced varying results (Sims, 2010; Mackenzie, 2012). Ultimately, the

spatial impacts of Protected Areas must be determined individually with respect to site-specific conditions. Local job creation through tourism development in Ruhija-canteen and Mburameizi has allowed for greater employment possibilities in these Park-edge communities than in the more peripheral villages of Katoma and Rwesanziro. The villages nearer to the Park have also seen a greater expansion of schools and education opportunities as a bi-product of tourism-related development. The more agricultural communities further from the Park also experience higher rates of crop destruction. This may be due to lower human density in these villages or, in the case of Rwesanziro, a nearby swamp that provides ideal habitat for elephants (ITFC researcher, pers. comm.). Additionally, researchers from MPI mentioned that gorillas and other animals sometimes traveled outside Bwindi's borders, crossing the road near Katoma, to get to another part of the Park. This would make human-wildlife encounters more likely near this village (pers. comm.).

In addition to location as a possible predictor of attitudes toward BINP, other characteristics of participants were thought to have some effect on responses. A greater demand for male labor in these communities limits women in their income-earning options. Similarly, young and fit individuals are more likely to be employed than older residents. Differential access to secondary and post-secondary education in the region exists

between the genders and economic classes, a system that disproportionately affects women having less financial security (Kwesiga, 2002; MPI researcher, pers. comm., 14 June 2015). It has also been suggested that having a higher education influences the appointment of Park-related jobs, further reinforcing the established inequities (Sandbrook, 2010). The interviewed residents who seemed to receive the most direct advantages from the Park's tourism unsurprisingly spoke more favourably of its influence.

When asked what the Park could do to improve, the most common response from interviewees, by far, was to better control its protected animals and/or to compensate for losses when crop damage does occur. Despite observed instances of crop feeding, gorillas seemed to be largely exempt from negative attitudes in the Ruhija tourism sector primarily due to their high-profile status. The conversation about problematic animals, instead, tended to focus on the olive baboons (*Papio cynocephalus anubis*) and forest elephants (*Loxodonta africana cyclotis*) with some mention of smaller monkeys (*Cercopithecus mitis stuhlmannii*; *C. l'hoesti*; and *Colobus abyssinicus*). A perceived failure of the Park to deliver on these fronts has caused extreme emotional and financial distress among residents, heightening existing tensions between them and BINP (Olupot *et al.*, 2009; Laudati, 2010). This was followed by a call to improve infrastructure in the communities; then employing more locals at

BINP; followed by an improvement of the current revenue-sharing system. Concerning the latter, poor communication between Park management and the communities has contributed to TRS policy misunderstandings and resentment, with many believing there to be fraud within the current system. Other responses were mentioned but were each indicated less than five times. Only 11% of people who were asked this question did not offer a suggestion for improvement for the Park. This is not to say, however, that these respondents believed there was nothing BINP could do to improve. Several stated they had no opinion or were simply unaware of ways the Park could or should improve, perhaps feeling it was not their place to say.

Despite having a mostly positive association with the Park, a number of local residents said they experienced significant consequences from living near a protected area. Because negative attitudes were more likely to be felt according to certain demographic characteristics, outreach should be considered for more marginalised groups like women, the elderly, and residents from the more peripheral and less developed villages of Katoma and Rwesanziro. This may include improved access to skills training, employment and education opportunities. Greater transparency and clarification of TRS guidelines to communities should also be addressed by Park management. It may also be prudent to explore the possibility of TRS distribution through trusted stretcher groups,

rather than local government to minimise speculation and accusations of institutionalised corruption (Blomley, 2003; Mbayahi, 2015). Such tension, if not confronted, may corrode the foundation for community-supported conservation in the region. The communities in Ruhija sector have a fairly recent history with gorilla tourism and further developed studies will need to be undertaken to continue to assess issues at the human-wildlife boundary.

REFERENCES

- Aharikundira M & Tweheyo M (2011). Human-wildlife conflict and its implication for conservation around Bwindi Impenetrable National Park. *USDA Forest Service Proceedings*, 39-44.
- Archabald K & Naughton-Treves L (2001). Tourism revenue-sharing around national parks in Western Uganda: Early efforts to identify and reward local communities. *Environmental Conservation*, 28(02): 135-149.
- Baker J, Milner-Gulland EJ & Leader-Williams N (2012). Park gazettement and integrated conservation and development as factors in community conflict at Bwindi Impenetrable Forest, Uganda. *Conservation Biology*, 26(1):160-170.
- Blomley T (2003). Natural resource conflict management: The case of Bwindi Impenetrable and Mgahinga Gorilla National Parks, southwestern Uganda. *CARE International Uganda*, 231-250.
- IUCN (2015). *2015 IUCN Red List of Threatened Species*, 2. Gland, Switzerland: IUCN. Accessed on 06 June 2015 from: www.iucnredlist.org
- Junker J, Blake S, Boesch C, *et al.* (2012). Recent decline in suitable environmental conditions for African great apes. *Diversity and Distributions*, 18(11): 1077-1091.
- Kwesiga JC (2002). *Women's access to higher education in Africa: Uganda's experience*. Kampala, Uganda: Fountain Publishers.
- Laudati AA (2010). The encroaching forest: Struggles over land and resources on the boundary of Bwindi Impenetrable National Park, Uganda. *Society and Natural Resources*, 23(8): 776-789.

Mackenzie CA (2012). Accruing benefit or loss from a protected area: Location matters. *Ecological Economics*, 76: 119-129.

Mbayahi A (2015, 26 May). Achievements and missed opportunities: Stakeholders assess the performance of the revenue sharing program in Kisoro and Kabale districts. District, Uganda: International Gorilla Conservation Program. Accessed on 23 August 2015 from: <http://goo.gl/Y6EYIY>

Miles L, Caldecott J & Nellemann C (2005). Challenges to great ape survival. In: *World atlas of great apes and their conservation*. Berkeley, CA: UNEP World Conservation Monitoring Centre, University of California Press. pp. 217-241.

Namara A (2006). From paternalism to real partnership with local communities? Experiences from Bwindi Impenetrable National Park (Uganda). *Africa Development*, 31(2): 39-68.

Newing H (2010). *Conducting research in conservation: Social science methods and practice*. London: Routledge.

Olupot W, Barigiyira R & Chapman CA (2009). The status of anthropogenic threat at the people-park interface of Bwindi Impenetrable National Park, Uganda. *Environmental Conservation*, 36(01): 41-50.

Sandbrook CG (2010). Putting leakage in its place: The significance of retained tourism revenue in the local context in rural Uganda. *Journal of International Development*, 22(1): 124-136.

Sims KR (2010). Conservation and development: Evidence from Thai protected areas. *Journal of Environmental Economics and Management*, 60(2): 94-114.

Do our perceptions change from before to after a primate walk-through enclosure experience?

Laura Williams

Cohort 13/14

lorcawilliams@yahoo.co.uk

Walk-through lemur enclosures are popular across the UK in Zoos and Wildlife parks. There has been extensive research into visitor's effects on primates during these experiences (Major, 2013) but not so much done on how this effects people's perceptions of these animals. This study involved 150 participants who completed a short survey both before and after experiencing a walk-through enclosure at a local wildlife park.

The results clearly show a clear change in the perception of lemurs when looking at the before and after rankings. Forty five (30%)

students ranked Wild as the first trait of a primate they thought of (Table 1) compared to 38 (25%) after the walkthrough. Students ranked Intelligent 1st, Friendly 2nd, Cute 3rd and Wild was only ranked 4th after the walkthrough (Table 2).

Before they experienced the walkthrough 33 students (22%) answered yes to the question "Do you think primates could make good pets?" There was an increase to 43 students (27.23%) saying yes after their experience with the lemurs.

Table 1: Before the walk through enclosure

Rank	Perception	number of participants	Percentage
1	Wild	45	30%
2	Cute	31	21%
3	Intelligent	29	19%
4	Aggressive	22	15%
5	Dangerous	7	5%
6	Friendly	7	5%
7	Scary	6	4%
8	Companion pet	1	0.05%
9	Cuddly	1	0.05%
10	Domestic	0	0%

Table 2: After the walk through enclosure

Rank	perception	Number of participants	Percentages
1	Intelligent	38	25%
2	Friendly	30	20%
3	Cute	28	19%
4	Wild	18	12%
5	Aggressive	15	10%
6	Cuddly	9	6%
7	Domestic	6	4%
8	Dangerous	3	2%
9	Scary	3	2%
10	Companion pet	0	0%

This is a 5.33% increase in those that think primates make good pets after they have visited a walk through enclosure. A further result in this study shows that Friendly ranked low in the survey before the walkthrough yet second in the survey after; this is a huge concern as these animals are legal to own with a licence in the UK under the Dangerous Wild Animals Act (DWAA). The high change in opinion shows, on a small scale, if these animals do gain more public exposure with the expansion of these walkthrough enclosures, what is to stop intrigued people going out and getting one of these animals as a legal pet? Why did so many students reconsider their views and rank the lemurs as

friendly, what did they experience in the walkthrough enclosure under the supervision of staff members? It was reported back to me that only one member of the park staff was in the enclosure at any one time and there were not actively regulating crowd control. Did this apparent freedom with the primates artificially affect the change in group's perceptions and is modestly regulating this attraction dangerous for impressionable patrons? Cute still comes in the top 3 both before and after which was to be expected and aggressive also did not change much in the rankings.

The results of this survey show that before the lemur walkthrough the perceptions that many held for these animals were encouraging. Balanced opinions of these animals showed an appreciation that lemurs were cute and intelligent but an acceptance that they were wild and could be aggressive. Unfortunately after the enclosure experience the general perception changed, with the participants ranking friendly very highly. This indicates a concerning reality that should perhaps be taken into account when sites look to set up one of these attractions. This survey only has a small sample size; the results would improve if the study was conducted on a larger scale but, the trends seen raise legitimate concerns about the possible effect these enclosures could have on their audiences. Ways to help these concerns could lay in the design of the enclosures themselves.

My sample size is not big enough to illustrate that walkthrough enclosures make people reconsider their perception of primates as wild animals but seeing a shift in opinion has been an interesting development. These walkthrough enclosures offer mixed messages to patrons where, although great effort is made to simulate a natural environment for the conservation of a DWAA animals, intimate encounters with primates can result in primates becoming more appealing as pets. My results suggest that the intimacy of a walkthrough enclosure successfully provoked my sample group to reconsider their feelings about primates but, however popular a walkthrough may be for a business, the experience of artificial contact will not replace reality and this will not help the attitudes of man or the treatment of the animals. I believe that the conflict of interest generated by zoo

and wildlife park businesses can be resolved by stopping these walkthrough experiences altogether and introducing more creatively immersive designs such as Zootopia (BIG architects, 2014) who are creating a zoo where it is the public who are enclosed not the animals. This design of caging the visitors and freeing the animals, creates a unique experience that would change overlapping or encroaching on the animals (Quinlal, 2014).

REFERENCES

BIG architects (2014). ZOOTOPIA.
<http://www.big.dk/#projects>

Major K (2013). The influence of visitor crowd size, activity and noise level on the behaviour of seven Lemur species, housed in either a visitor walk through enclosure or closed exhibit. *Canopy*, 13(2): 7-10.

Quinlal B (2014). *BIG Unveils Design For "Zootopia" In Denmark*. *ArchDaily*. Accessed <http://www.archdaily.com/532248/big-unveils-design-for-zootopia-in-denmark/>

Studying human-animal relationships in a zoo environment

Elena Račevska

Cohort 14/15

elenaracevska@gmail.com

The human-animal relationship (HAR) is defined as a "relationship between a human and an animal that have a history of interactions which allows them to make predictions about each other's behaviour" (Estep & Hetts, 1992). Even though mutual individual recognition is required, it is hypothesised that animals may also generalise their experiences with their caretakers to other humans (Jones, 1994).

While negative HAR is mostly a result of negative handling and fear of humans, positive HAR develops through frequent, calm, and friendly contact, while neutral HAR is a result of frequent neutral or mildly positive contact, with a lack of negative interactions, as well as many intensely positive ones (Waiblinger *et al.*, 2006). Negative HAR was found to have many undesirable consequences for the production animals in terms of their diminished welfare, decreased productivity, and lower product quality. The effects of positive HAR include good welfare, higher productivity, higher reproductive success (Mellen *et al.*, 1991; Wielebnowski *et al.*, 2002), as well as a better recognition of animals' individual behavioural cues (Jensvold, 2008).

HAR in a zoo environment is often referred to as KAR, or a keeper-animal relationship. Hosey (2008) proposed a model according to which animals' fear of humans, often dependent on the species, is the starting point, further moderated by the history of animals' interactions with humans. Different keeper-related variables, such as work experience, degree of qualifications, job satisfaction, and zoo-keeping style (i.e. number of daily feedings, visibility during husbandry procedures, provision of enrichment, regular contact with the animals), as well as animal-related variables, such as affinity to keeper and animal's personality traits, were found to affect HAR (Carlstead, 2009).

In addition to HAR, human-animal bond (HAB) has been proposed as another concept that may be a better way of reference to particularly good HAR. HAB is defined by the American Veterinary Medical Association (AVMA) as a "mutually beneficial and dynamic relationship between people and other animals that is influenced by behaviours that are essential to the health and well-being of both" (AVMA, 1998). According to Russow (2002), HABs are formed between humans and individual animals, they are reciprocal and persistent, and tend to promote an increase in

wellbeing of both parties involved. It is still not agreed upon whether HAB and positive HAR are qualitatively different concepts (Hosey & Melfi, 2012), so terms are still used interchangeably.

To assess HAR or KAR, it is important to obtain both the measures of animal-related and keeper-related variables. In terms of animal-related variables, it may be valuable to obtain data on animals' personalities, patterns of their group's social dynamics (i.e. affiliative and antagonistic behaviours, best accompanied with a record of which particular animals are more prone to initiating these interactions, and which are more often on their receiving end), as well as information of their rearing history and life history. Furthermore, collecting their behavioural data is of high importance to understanding the role of KAR and welfare. As far as keeper-related variables are concerned, it is useful to obtain information on keepers' educational background (highest degree of qualifications), work experience (with particular species, particular animal group, but also at the job in general), frequency of working with the animals in question, and their daily husbandry routines. Descriptive variables of KAR, such as whether or not keepers hand-feed the animals, train them, or whether the animals allow physical contact can be obtained from the keepers as well. Important question that should not be left out is whether the animals ever initiate contact with their caretakers.

The relationship between animals and keepers can be studied indirectly - by interviewing the keepers, and directly - by observing different aspects of keepers' interactions with the animals. If indirect approach is employed, keepers can be asked to describe how their animals react when they call them (also noting the potential variables that may influence animals' responses, such as acute hierarchy changes, number of visitors present, etc.), feed them, or simply pass by the enclosure. Keepers can also be asked to describe their relationship to each animal and whether they think they have a bond with it. History of KAR should always be included in the study, especially in regard to potential difficulties the animals have caused to the keepers, or instances of aggression that may have Direct approach to studying KAR may be more

difficult to ensure, as zoos may not always be eager to allow an outside researcher to get such an intimate view. Provided that there is a possibility to directly observe human-animal interactions, this methodology may yield a more objective measure. Interviews with keepers, however, do not have to be discarded, as they are an opportunity to obtain very comprehensive data on, for instance, keepers' perception of the animals in their care, or their perceived benefits of having positive KARs, which may otherwise be very difficult to acquire. On the other hand, it is important to be aware of this method's potential shortcomings, as the keepers may

unknowingly overestimate the quality of their KARs, which can lead to faulty study conclusions. Interviews should therefore, if possible, always be paired with keeper-independent measures of KAR.

Since previous studies suggest that HAR might have implications for animal welfare, it is important to study it systematically and examine all variables that may potentially contribute to HAR development. It is important to ensure a large and diverse sample, both in terms of animal subjects and human participants. It is also essential to reach a consensus on terminology used in this type of studies, and come to a results-based agreement on whether or not positive HAR and HAB can be used interchangeably, or they represent different phenomena. Moreover, operationalisation of the way both concepts are measured is of paramount importance to the studies' internal validity.

REFERENCES

- AVMA Committee on the Human–Animal Bond (1998). Statement on the human–animal bond. *Journal of American Veterinary Medical Association*, 212:1675.
- Carlstead K (2009). A comparative approach to the study of keeper–animal relationships in the zoo. *Zoo biology*, 28(6): 589-608.
- Estep DQ & Hetts S (1992). Interactions, relationships, and bonds: the conceptual basis for scientist-animal relations. In: Davis H & Balfour D (Eds.): *The Inevitable Bond: Examining scientist-animal interactions*. Cambridge: Cambridge University Press. pp. 6–26.
- Hosey G (2008). A preliminary model of human–animal relationships in the zoo. *Applied Animal Behaviour Science*, 109(2): 105-127.
- Hosey G & Melfi V (2012). Human–animal bonds between zoo professionals and the animals in their care. *Zoo biology*, 31(1): 13-26.
- Jensvold MLA (2008). Chimpanzee (*Pan troglodytes*) responses to caregiver use of chimpanzee behaviours. *Zoo Biology*, 27:345–359.
- Jones RB (1994). Regular handling and the domestic chick's fear of human beings: generalisation of response. *Applied Animal Behaviour Science*, 42: 129–143.
- Mellen J (1991). Factors influencing reproductive success in small captive exotic felids (*Felis* spp.): a multiple regression analysis. *Zoo Biology*, 10: 95–110.
- Russow LM (2002). Ethical implications of the human–animal bond in the laboratory. *ILAR Journal*, 43:33–37.
- Waiblinger S, Boivin X, Pedersen, *et al.*, (2006). Assessing the human–animal relationship in farmed species: a critical review. *Applied Animal Behaviour Science*, 101(3): 185-242.
- Wielebnowski NC, Fletchall N, Carlstead K, Busso JM & Brown JL (2002). Noninvasive assessment of adrenal activity associated with husbandry and behavioral factors in the North American clouded leopard population. *Zoo Biology*, 21: 77–98.

The tradition of keeping primates as pets in the UK goes back a few hundred years. The exploration of new continents led to the ownership of monkeys in the Tudor Courts being a symbol of prestige. A painting in the House of Commons depicts Henry VII's pet monkey and Catherine of Aragon was painted with one of the reputedly 14 monkeys that she owned. In the 19th century the people of Hartlepool famously hanged the primate mascot of a Napoleonic ship, apparently believing the monkey was a Frenchman. Parliament has never (with the exception of the recent Dangerous Dogs Act), legislated against the keeping of any animal, although in 1974, the Dangerous Wild Animals Act, (DWAA), incorporated a schedule of animals that required owners to hold a licence. The main aim of the Act was to provide protection for people, rather than the welfare of the animals. This Act and the UK becoming a signatory in 1976 of the Convention on the Trade of Endangered Species, (CITES), was followed by an apparent diminution of the keeping of privately owned primates. However, as the pet trade became less dependent on importing animals, by breeding in the UK, as well as increasingly focusing on those species that do not require a licence under the DWAA, private primate ownership has risen to an estimated 5000 individuals. This trend may well be encouraged by the frequent portrayal in the Media of primates in the human environment.



Wild Futures' campaigns work is focused on the prevention of abuse of primates in captivity, with the specific aim of putting an end to the primate pet trade in the UK and overseas. Despite the lack of recognised care standards and insufficient enforcement of licensing laws, it is still legal to own a primate in the UK. Inadequate knowledge by owners, of species specific requirements, behaviour, diet, veterinary care, social opportunity and space leads to mental, physical and emotional suffering for pet primates.



Due to poor regulation in the UK, it is difficult to ascertain numbers of privately owned primates. Since 2005, Wild Futures has, using the Freedom of Information Act 2000, conducted an annual survey of Local Authorities on licensing for primates under the DWAA. This research, together with information provided by the RSPCA, has

resulted in the current estimate that about 5,000 primates are currently kept in private ownership in the UK. Lemurs appear the most popular licensed primate pet in the UK, however, the genus *Callithrix* does not require a licence and is probably the most commonly kept primate, but exact figures are impossible to establish for this very reason.



Wild Futures' flagship project, The Monkey Sanctuary, in Cornwall, UK, is home to victims of the primate pet trade. The charity has rescued 40 monkeys since 2001 and, in response to the frequent calls for its services, is currently appealing for funds in order to extend their facilities.

Determined to tackle the cause of the problems, Wild Futures works in partnership with other animal welfare organisations and is a leading voice in lobbying local and central government to implement changes in the law. They also work within parliamentary working parties with the aim of changing UK animal welfare legislation and act as an advisory service in order to provide clear information to discourage people from purchasing primates as pets. Wild Futures have gained strong public support demonstrated by over 50,000 signatures on its paper and online petition against the primate pet trade.



Please visit

www.wildfutures.org

to find out more

Sign our online petition at

<http://www.wildfutures.org/petition/>

For references and sources on the UK primate pet trade, please contact campaigns@wildfutures.org

University Events

Seminar Series

The seminar series is a weekly event which events guest speakers to present their research. We are currently in the process of recruiting speakers for our Winter semester. If you are interested in attending or presenting please do not hesitate to get in contact with us. Contact details are provided within the contents pages.

1 Feb	Ian Redmond (Ape Alliance, Hope4Apes)
8 Feb	Katie Chabriere (Morroccan Primate Conservation)
15 Feb	Dr Andrew Smith (Anglia Ruskin University)
22 Feb	Dr Sian Waters (Barbary Macaque Conservation in the Rif)
29 Feb	Jamie Craig (Cotswolds Wildlife Park)
7 March	Stephanie Poindexter (Oxford Brookes University)
14 March	Dr Guiseppe Donati (Oxford Brookes University)
21 March	Dr Jessica Bryant (Institute of Zoology, ZSL)
11 April	Dr David Chivers (Cambridge University)
18 April	Dr Adriano Lameira (Durham University)



2015-2016 Cohort of the MSc Primate Conservation

Come visit us on the web!

www.brookes.ac.uk/primates