



Original research article

Deterring poaching in western Tanzania: The presence of wildlife researchers



Alex K. Piel^{a,b,*}, A. Lenoel^{c,e}, C. Johnson^d, F.A. Stewart^a

^a Department of Archaeology and Anthropology, University of Cambridge, Cambridge CB2 3QG, United Kingdom

^b Department of Anthropology, University of California, San Diego, La Jolla, CA 92093, USA

^c University of Montpellier II, 5 bd Henri IV - CS 19044, Montpellier Cedex 2, France

^d College of Science, Wallace Building, Swansea University, Singleton Park, Swansea SA2 8PP, United Kingdom

^e Université de Montpellier 2, Place Eugène Bataillon, 34095 Montpellier Cedex 5, France

ARTICLE INFO

Article history:

Received 25 November 2014

Accepted 26 November 2014

Available online 28 November 2014

Keywords:

Researcher presence
Illegal poaching
Unprotected area
Deterrence
Tanzania

ABSTRACT

Illegal poaching threatens wildlife across Africa. Historically and even today, conservationists have lobbied local and national governments to create and better manage protected lands to reduce this threat. In many cases, however, governments are either unable or unwilling to invest further resources in exclusive protected areas, such as national parks. In addition to traditional methods, or where such approaches are not feasible, a complimentary form of protection is researcher presence, which has been described recently to deter wildlife poaching. We present data over four years that assesses the impact of researcher presence on wildlife and snare encounter rate in an unprotected area in western Tanzania, where there is a mid-term chimpanzee study ongoing. We systematically collected spatiotemporal presence data on the nine, most common mammal species in the study area, as well as all snares. Snare encounter rates increased with distance from researcher base station, whilst overall mammal encounter rates decreased. Further, mammal encounter rates have increased each year since the arrival and permanence of researchers in this remote area. Our findings have implications for the benefits of researcher presence, namely in deterring poaching, especially in unprotected areas with minimal governmental surveillance.

© 2014 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

1. Introduction

Large mammals are threatened across their distribution in Africa. From long-term studies, e.g. Serengeti ecosystem (Sinclair et al., 2007), numerous data describe mammal presence, movement, and more recently, threats, within, along the periphery, and outside of protected area (PA) boundaries. The pattern is clear: PAs that once provided a safe refuge for threatened or endangered species are failing to mitigate human–wildlife conflict (Western et al., 2009; Craigie et al., 2010). Increasingly, PAs are vulnerable to human encroachment, especially by poachers (Metzger et al., 2010), in addition to the same ecological changes and threats to adjacent, unprotected areas, especially when both are part of the same ecosystem (Hansen et al., 2011). Specifically, agriculture, logging and other forms of human land use in unprotected areas “may alter the flows of energy, materials, and organisms across the ecosystem in ways that change ecological functioning” of protected areas (Hansen and DeFries, 2007: 978).

* Corresponding author at: Department of Archaeology and Anthropology, University of Cambridge, Cambridge, CB2 3QG, United Kingdom. Tel.: +44 7557915813.

E-mail address: akp34@cam.ac.uk (A.K. Piel).

<http://dx.doi.org/10.1016/j.gecco.2014.11.014>

2351-9894/© 2014 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

In Tanzania, where >30% of land already has some protective status (forest reserve, game reserve, etc.), but where legal and illegal exploitation of wildlife continues to cause a decline of numerous mammalian species (Stoner et al., 2007; Wasser et al., 2010), it is politically and economically complex to petition for further PAs. We argue here that whilst research provides essential knowledge for applied conservation, additionally it can provide protection that may be equally effective to that of upgrading an area to national park status. Recent studies have described the interaction between researchers and conservation, namely the role of researcher presence in deterring illegal hunting and aiding species diversity and abundance (Pusey et al., 2007; Campbell et al., 2011; Laurance, 2013). Whilst mere researcher presence would have no effect on lucrative, commercial hunting for species like elephant (*Loxodonta africana*), it may deter small scale, subsistence hunting which comprises most of this illegal industry (Abernethy et al., 2013), especially if it is combined with traditional, government-facilitated patrols. Few studies, however, have systematically measured the effect of researcher presence on hunting pressure. We sought to do so by investigating changes in mammal and snare encounters over the course of the first four years of a mid-term study of chimpanzees in an unprotected area of open land in western Tanzania. We provide here empirical data that demonstrate the positive effect researchers have towards species conservation and the maintenance of ecosystem integrity.

1.1. Researcher presence and conservation

Research and conservation meet at a complex intersection. Some have argued that traditional divisions between these fields are merely “imaginary or insufficient” to prevent cooperation (Caro and Sherman, 2013: 305); others have described explicit ways that scientists can contribute to providing conservation-minded results, e.g. effective population sizes (Anthony and Blumstein, 2000). Others have emphasized the incorporation of data into conservation management plans (Pusey et al., 2007), although the effectiveness of specific management plans is not yet well understood (Struhsaker et al., 2005). Some times, long-term studies themselves or just the very presence of researchers may mitigate threats to systems or species (Wrangham and Ross 2010, 2010).

In West Africa, Campbell et al. (2011) examined the conservation value of a long-term chimpanzee research station in Tai Forest, Cote d'Ivoire. They walked 200 km of line transects and found that all primates and especially (over-harvested and endangered) duiker species (*Philantomba maxwellii*; *Cephalophus dorsalis*) were more abundant closer to the researcher station. Subsequent density analyses revealed that primates, irrespective of species, lived at densities up to 100x larger near the research station, further demonstrating the benefit of a permanent research station, especially when researchers coordinated anti-poaching patrols with local law enforcement (Goran et al., 2012). However, as Tai Forest is a national park, law enforcement may have been greater around the researcher station. Consequently, this study could not determine whether researcher presence alone had a deterrent effect.

To better understand the role that *only* researcher presence plays in deterring poaching, ideally one studies a system with minimal government surveillance, yet with permanent researcher presence. Such contexts are rare, as it is actually the nature of PAs that encourage and foster researcher presence, providing infrastructure, safety, and often history of known wildlife populations (Sinclair et al., 2007). We measured the spatiotemporal distribution of snare and mammal encounters as a function of proximity to the researcher base station and overall search effort in the Issa Valley, Ugalla, western Tanzania. Data collection began late in the first year of the establishment of the Ugalla Primate Project—a continuous, ongoing study of woodland primates and medium–large mammals. Our study differs in three key ways from the aforementioned studies at Tai and Gombe. First, the Issa Valley lies in Open Area, belonging to Tanzania's central government, with no formal protective status. It is >30 km from the nearest protected area (a forest reserve, also with no formal government surveillance). Second, data collection on snare and mammal encounters began at the onset of our Project, and thus we can monitor from baseline when there was minimal history of researcher presence. Finally, we have systematically monitored search effort, allowing us to control for this critical element in our analyses.

1.2. Regional history

The Greater Mahale Ecosystem Tanzania hosts over 90% of Tanzania's estimated 2200 chimpanzees (Moyer et al., 2006; Piel and Stewart, 2014) and most of the area is still considered Open Area. Historically, brief surveys (Moore, 1994; Kano et al., 1999; Schoeninger et al., 1999; Moyer et al., 2006; Ogawa et al., 2006a,b, 2012; Piel and Moore, 2010) or isolated studies (Hernandez-Aguilar, 2006; Moore and Vigilant, 2013) have characterized research into the region, most of which have focused on chimpanzee distribution, although some also reported presence/absence of medium and large mammals as well (Moyer et al., 2006; Hernandez-Aguilar, 2009; Iida et al., 2012). Until recently, there was no mid-term length study outside of the NPs, and no study that was able to assess change over time, either in mammal presence or threat intensity.

1.3. Aims and hypotheses

In this study we aimed to assess change over time and space in mammal density, and mammal and snare encounters, to determine whether researcher presence has a positive impact. We hypothesized that mammal densities will increase over time in the core-study area due to protective presence of researchers. In the core and peripheral areas we hypothesized that there would be spatiotemporal relationships between mammal and snare encounters as a function of the distance from

Download English Version:

<https://daneshyari.com/en/article/4379565>

Download Persian Version:

<https://daneshyari.com/article/4379565>

[Daneshyari.com](https://daneshyari.com)