Human Dimensions of Animal Exploitation: Towards Understanding the International Wildlife Trade and Selfie-Tourism on Twitter

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ABSTRACT

This study investigates statements of participation in an exploitative animal activity on social media website Twitter. The data include social posts (tweets) related to two exploited species - the sloth (N=32,119), and the elephant (N=15,160). Tweets for each of these case studies were examined and labeled. The initial results reveal several features of interaction with exploited species. Namely, there are a high number of tweets indicating that individuals participated in exploited species activities during vacations in destinations that double as native countries for the exploited species. The data also indicate that a large number of exploited species activities take place at fairs, carnivals, and circuses. These initial results shed light on the trends in human participation in activities with exploited species. These findings will offer insight to stakeholders seeking to bolster education programs and quantify the level of animal exploitation.

CCS CONCEPTS

• **Applied computing → Law, social and behavioral sciences**.

KEYWORDS

social media, datasets, text tagging

1 INTRODUCTION

The International Wildlife Trade (IWT) is a burgeoning illicit economy, an emerging area of cyber and transnational crime, and a legitimate concern of public health officials. From ivory and furs to gall bladders and scales, nonhuman animals and their body parts are highly sought after across the globe. IWT threatens the health and safety of humanity twofold: first by straining ecosystems through reduction of biodiversity and causing grievous harm to the environment, and second by increasing the risk of the transmission of deadly zoonotic diseases from nonhuman animals to humans. Consumer demand for these products stems largely from either an affinity for 'exotic' experiences, pets, or decorations, or the supposed medicinal qualities of nonhuman animal parts [3].

The rise of social media has led to a rise in the individuals' ability to share their own unique experiences. These experiences are often shared in the form of images of interesting experiences in exotic destinations. This practice, known colloquially as "selfie-tourism", is defined here as a process where individuals travel to a destination or partake in an activity to get a photograph. While some of these images may contain beautiful waterfalls, statues, or other world wonders, all too often these experiences involve encounters with wildlife that are either brokered by profiteers or sought out organically by the individuals themselves. As we will explore further at a later point, the types of experiences individuals seek out and procure with wildlife commonly vary based on the location and the type of species. So too does the level of harm to the nonhuman animal. For example, some tourists may seek a sloth in the wild and subject it to an uncomfortable petting or holding experience, while others may visit a sloth held captive at a roadside zoo and pay a fee to pet or hold the animal.

In this work, we collect social posts (tweets) from Twitter via the use of targeted phrases. We analyze those posts and flag the ones that contain exploitative terms against sloths and elephants. 232 tweets (1.5%) in the elephant dataset name some popular vacation destinations in association with exploitative activities involving elephants. Additionally, we uncover other exploitative contexts and aspirations in the sloth and elephant datasets. We present our key findings in Section 6. Our preliminary findings are promising, and they contain useful insights for stakeholders who wish to address the problem of exploitation of wildlife.

2 PROBLEM

There is significant convergence between the illegal wildlife trade, captive wildlife exploitation for tourism, selfie-tourism, and the pet trade. Here our analytical lens is pointed specifically towards admissions of participation in an activity with an exploited species. We define this as any statement that constitutes admission of participation in an activity with an exploited species. This could include holding or riding, as we will target in this study. Most research on exploited species is focused on a small subset of species and focuses on identifying what we define as wildlife trafficking, with a notable focus on markets for animal parts. The competing legal statutes

and enforcement jurisdictions render this a highly complicated task. Given the prominence of gray markets in the wildlife arena, it is important to quantify human engagement in experiences that threaten the health and welfare of human and nonhuman animals alike.

While there is international legislation that governs the international trade in flora and fauna, this does not settle the dust in regard to unraveling the intricacies in the legality of ownership or captivity of a nonhuman animal. An animal may be trafficked from one jurisdiction illegally and be technically legally owned in another. Corruption is rampant in regard to the trade and movement of wildlife, and this further complicates matters by creating extralegal permitting processes that undermine legal mechanisms. Given these factors, we will focus on detection of 1) Statements of a desire to participate in an activity with an exploited species and 2) Statements of having participated in an activity with an exploited species. While many of these activities involve contact with animals in unnatural settings, due to the aforementioned legal complications we make no determinations as to the legality of the activities.

3   STATE OF THE ART

There has been significant discussion regarding utilizing machine learning to analyze IWT. [1] provides a framework for using machine learning to investigate the IWT on social media. Similarly, [5] provided a framework for using the internet to monitor and quantify the wildlife trade. This guide focuses on the surface web and defines a multifaceted framework that encourages researchers to define the species to be focused on, compose a list of candidate websites, and from that list develop a list of target websites and determine a temporal monitoring period.

There have been numerous analyses of IWT on various online platforms. [6] published research aiming to detect wildlife product promotion and sales on Twitter. The authors focused their data collection on keywords related to the promotion and sale of elephant ivory and pangolins. The authors employed a biterm topic model (BTM) combined with the keywords to filter data. The resulting data collected over 14 days consisted of 138,357 tweets containing matching keywords. Of these tweets, the authors identified 53 tweets from 38 unique users that the authors suspect promoted the sale of ivory products. There was no positive identification of any listing associated with pangolins or their related products.

[2] took a two-pronged approach and surveyed open animal markets as well as the web to examine the poaching of wild cats. [5] utilized NLP text classification to monitor a forum where Australians can purchase or sell birds. The forum was monitored for five months from July to December 2019. The resulting data consisted of 16,500 listings. The authors hand tagged all of these listings, then attempted to use NLP algorithms to replicate their manual categorizations of the posts algorithmically. The authors found that NLP algorithms can identify IWT postings with a high degree of accuracy.

The novelty in our work is in the novel use of targeted phrases on Twitter to quantify admissions of participation in an activity with an exploited species. The current research from [1] and [5], focuses on presenting frameworks to help researchers identify wildlife trade

Table 1: Targeted phrases.

Sloth Contact	Sloth Selfie	Elephant Ride
"held a sloth"	"slothselfie"	"rode an elephant"
"hold a sloth"	"sloth selfie"	"ride an elephant"

postings such as live animal sales and animal part sales, but stops short at quantifying the dimensions of human engagement with these products on social media sites such as Twitter, instead focusing on wildlife listings in online forums as was examined in [4]. Given the level of convergence between IWT, exploited species activities, and zoos that are questionable at best, we must understand human dimensions of these activities including desires and motivations to better prepare policymakers to present the extent of this issue meaningfully to a variety of stakeholders.

4   PROPOSED APPROACH

Based on the results of previous research, textual analysis via natural language processing and machine learning is an effective approach. The main issue in working with Twitter data is the sheer volume. To reduce this volume and create a targeted approach we have developed targeted phrases that can amount to admissions of participation in an activity with an exploited species. The two exploited species broadly targeted in this study are 1) the sloth and 2) the elephant.

These exploited species were chosen based on the high likelihood of the presence of admissions of participation in the associated exploitative activities. The main limitation of this approach is that it only captures tweets that constitute direct admissions of participation in an activity with an exploited species. It does not capture, say, a tweet where a user tweets a standalone picture of themselves holding a sloth with no text. The text is a crucial signal and can point us towards targeted data, but it is limiting in that there is certainly pertinent data that are not captured, as well as noise we must comb through.

The sloth data is broken down into two datasets - one containing tweets with targeting phrases indicating physical contact with a sloth will be referred to as the sloth contact dataset. The dataset containing tweets with signals for sloth selfies will be referred to as the sloth selfie dataset. Differentiating between exploitative tweets in these two contexts is inherently different, so they have been kept as separate datasets to reduce complexity, however, given the overlap in themes of sloth abuse across these datasets they have been analyzed together. The elephant dataset is one dataset containing tweets matching the targeted phrases "rode an elephant" or "ride an elephant" (see Table 1).

5   METHODOLOGY

Previous work by [4] has ascertained that textual analysis is an effective means of assessing social media posts for wildlife trade signals. These methodologies lend well to identifying and analyzing admissions of participation in an activity with an exploited species. We labeled a portion of the dataset to represent different harm categories. Harm categories for the sloth include benign (i.e., "I held a sloth in my dream"), exploitative (i.e., "I held a sloth on

vacation") and aspirationally exploitative (i.e., "it is my goal in life to hold a sloth").

With the elephant dataset there are different categories based on the type of admission. General exploitation ("I rode an elephant in Thailand"), exploitation where the user tweeting is an adult taking their children on an exploitative activity ("I took my sons to ride an elephant at the county fair") and exploitation where the user is tweeting about an exploited activity they took part in as a child ("I rode an elephant in Thailand when I was 5"). String queries have also been utilized to identify geographical themes in the content based on the high likelihood that these locations will be mentioned in an abusive tweet.

6   RESULTS

The results of the initial analysis are promising from a research perspective. There are 232 (1.5%) tweets in the elephant dataset that specifically name Thailand, India, Bali, Laos, or Vietnam - popular destinations for exploitative activities with elephants. Additionally, 486 (3.2%) tweets mention exploitative exhibits such as "circus", "carnival", "gardens" or even a "zoo" (a term often used loosely and often is more akin to a roadside attraction than a western concept of a zoo). A further 65 tweets (<0.05%) mention terms indicating the user was discussing a vacation, such as "vacation", "holiday", "resort" and "tour". With the sloth contact data, there are 387 (4%) tweets that constitute direct admissions of participating in an activity with the sloth and were classified as exploitative, with these tweets containing phrases such as "I held a sloth" or "we held a sloth". A further 786 (8.2%) tweets constituted aspirations to participate in an exploitative activity with the sloth, and contained targeted phrases such as "I wish I could" and "I want to". We also identified 80 (.83%) tweets mentioning terms indicating the user was discussing a vacation, such as "vacation", "holiday", "resort" and "tour". Finally, in the case of the sloth selfie dataset, 31 tweets (<.01%) contained mentions of South or Central American countries to include Brazil, Mexico, and Peru.

7   CONCLUSIONS AND FUTURE WORK

These preliminary findings provide useful insights for stakeholders wishing to communicate the extent of this phenomenon to constituents and policymakers. The results of this initial analysis indicate that there is a significant presence of admission of participation in activities with exploited species on Twitter. There is also an indication that travel, or tourism, is possibly a factor in participation in these activities. By better understanding the human dimensions of this phenomenon, we can learn how to tailor policy and interventions to prevent engagement in this type of behavior. Future work will include building on these search methodologies by using clustering algorithms, computer vision, and other machine learning methodologies to classify tweets, as well as expanding the breadth of the data to include other social media sites and target phrases.

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