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Tails in the Wind: An Exploratory Examination of Media Reports on Nonhuman Animals Throughout Hurricane Maria in Puerto Rico

Nathan Jagoda
University of Central Florida



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TAILS IN THE WIND: AN EXPLORATORY EXAMINATION OF MEDIA REPORTS ON
NONHUMAN ANIMALS THROUGHOUT HURRICANE MARIA IN PUERTO RICO

by

NATHAN JAGODA
B.A. University of Central Florida, 2017

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ABSTRACT

On September 20th, 2017, category four Hurricane Maria rattled Puerto Rico, causing extensive damage throughout the island. While the experiences, injuries, and deaths of humans resulting from Hurricane Maria have received both scholarly consideration and large amounts of attention from media sources, one critical area that has been overlooked by many, particularly academics, are the ways in which various media sources have reported on, described and discussed nonhuman animals impacted by the storm. This study aimed to address this gap by analyzing media reports of nonhuman animals throughout the days before, during, and after Hurricane Maria in Puerto Rico. Mixed method content analysis was conducted on fifty-five media reports found to contain discussion of nonhuman animals and Hurricane Maria in Puerto Rico, though a majority of the analyses were qualitative in nature. Analyses resulted in the identification of a variety of themes found to be emergent from the data.

Themes explored include nonhuman animal abandonment, insufficient shelters, damaged shelters and lack of resources, collaboration between nonhuman animal welfare organizations, spay/neuter practices, positive descriptions of sotos, bringing nonhuman animals to the U.S. mainland, a second chance at life for nonhuman animals, and the hierarchical arrangement of nonhuman animals presented within media reports. Results of the study point towards the need for greater planning and resource allocation in regard to nonhuman animals in Puerto Rico both during times of disaster and everyday life. The spay and neuter infrastructure and the animal shelters on the island are especially in need of resources. Additionally, the results indicate that the media sources examined placed their main focus on dogs and cats impacted by the storm, suggesting that these species of nonhuman animals hold a spot towards the top of the American nonhuman animal hierarchical arrangement.

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CHAPTER ONE: INTRODUCTION

The central topic that this research explores is media reports of nonhuman animals throughout the days before, during, and after Hurricane Maria in Puerto Rico. On September 20th, 2017, category four Hurricane Maria rattled Puerto Rico, causing extensive damage throughout the island. Making landfall near Yabucoa, Puerto Rico, the hurricane carried maximum sustained winds of 155 miles per hour and heavy rainfall that resulted in disastrous flooding throughout the entirety of the island (The National Weather Service 2017). At some point during the disaster event, all municipalities within the territory experienced flash flood warnings, and some areas experienced over three feet of rainfall alone. The deadliest storm to strike the island since 1928, Hurricane Maria generated an estimated death toll in excess of 2,975 people and caused massive amounts of damage to the island's infrastructure (George Washington University 2018).

Telecommunications were virtually wiped out, while roads, marinas, homes, and other structures experienced significant destruction caused by wind, flooding, mudslides, and other hazards related to the disaster event (The National Weather Service 2017). To date, Federal Emergency Response Agency teams have cleared a reported 11.6 million cubic yards of debris and the agency has approved 37.6 billion dollars in aid, although a majority of estimates place the cost of recovery much higher (Federal Emergency Response Agency 2019). Populations affected spanned a wide variety of sociodemographic make-ups, however, those living in low socioeconomic areas and males over the age of 65 were impacted at disproportionately higher rates (George Washington University 2018).

While the experiences, injuries, and deaths of humans resulting from Hurricane Maria have received both scholarly consideration and large amounts of attention from media sources, one critical area that has been overlooked by many, particularly academics, are the ways in which various media sources have reported on, described and discussed nonhuman animals impacted by the storm. Claribel Pizarro, of the Humane Society of Puerto Rico, has stated that the Society estimates that since Hurricane Maria, there

are approximately 500,000 stray dogs, referred to locally as "satos," and approximately one million stray cats inhabiting the island (King 2018). Though many stray nonhuman animals inhabited the island prior to the storm due to "limited spay and neuter practices" and low adoption rates, Hurricane Maria likely generated a significant contribution to this number as a result of nonhuman animal loss and abandonment, which is a topic that this study investigates (The Sato Project 2016: FAQ). As Leslie Irvine states in her book, *Filling the Ark: Animal Welfare in Disasters*, "Any incident that affects large numbers of people, will affect animals as well" (Irvine 2009: 34).

Additionally, the devastation from Hurricane Maria also caused extensive damage to animal shelters on the island, which is not an uncommon occurrence during severe disaster events (Irvine 2004; Irvine 2009). The destruction of animal shelters was also a likely contributor to the large number of strays currently living in Puerto Rico. Though a variety of nonprofit agencies, such as The Sato Project, All Sato Rescue, and Amigos de los Animales, attempt to rescue and care for these stray nonhuman animals, a substantial amount of them still inhabit Puerto Rico, shown by the aforementioned 500,000 stray dogs and one million stray cats.

By examining media articles and reports related to nonhuman animals in Puerto Rico throughout Hurricane Maria, the content, approaches, and disparities present among the reporting and descriptions presented can be documented, interpreted, and critically analyzed. Additionally, this study builds an understanding of the resources that were reported to be deployed to aid Puerto Ricans and their pets, as well as stray nonhuman animals, throughout the disaster event. The study also builds an understanding about how media sources reported on nonhuman animals inclusion in the evacuation efforts surrounding Hurricane Maria, and investigates nonhuman animal adoption efforts that have taken place since the storm.

Insights gained from this study shed light, to some extent, on how the human-nonhuman animal relationship played out in Puerto Rico during Hurricane Maria. These insights have also resulted in a

cumulative report, which examines various types of content and the ways that media sources have reported on nonhuman animals caught up in the disaster event. Reviewing, interpreting, and critically analyzing these media reports has proven to be essential for future planning and resilience efforts, as these reports undoubtedly increase understanding of the strengths and weaknesses present in planning and care for nonhuman animals during disaster events. Additionally, these reports played a role in influencing the ways that the public came to understand the ways nonhuman animals were planned for and cared for during the disaster. Each media source constructs their discussions in unique ways, making the dissection of these constructions essential to understand their potential impacts on those who view them.

CHAPTER TWO: METHODOLOGY

The methodology used in this study is primarily qualitative. However, quantitative approaches are also included in limited forms. A majority of the study consists of content analysis of extant artifacts which are outlined below. This content analysis was also accompanied by a smaller subset of quantitative analyses. These quantitative analyses included an examination of keyword search results that were used to obtain the artifacts used for content analysis. A bulk of the study took place within the time frame of January to July of 2019. This time frame begins approximately one and a half years after Hurricane Maria made landfall in Puerto Rico.

Data Collection

The artifacts and data analyzed were collected through content analysis of various media articles and reports found to contain discussion regarding Hurricane Maria, the storm's impact on the nonhuman animals living in Puerto Rico, as well as emergency responses to the storm. The content analysis conducted has generated insight and helped to develop an understanding around several main topics, which include the following: 1) reported inclusion of nonhuman animals in Puerto Rican evacuation efforts throughout the event of Hurricane Maria; 2) reported impacts that the storm had on nonhuman animals living on the island; 3) reported resources available to Puerto Ricans who owned pets throughout the event of Hurricane Maria; 4) nonhuman animal adoption efforts that have reportedly taken place since the storm; and 5) the role that media sources have played in the constructed representation of the four aforementioned topics.

Media articles and reports were obtained through web searches using several specified keyword combinations. Individual keyword searches were conducted using the following keyword combinations: 1) Puerto Rico, Hurricane Maria, and animals; 2.) Puerto Rico, Hurricane Maria, and wildlife; 3.) Puerto Rico, Hurricane Maria, animals, and rescue; and 4.) Puerto Rico, Hurricane Maria, animals, and adoption.

Web searches were carried out through the search engine Google News. Google News was selected as the search engine to be utilized within the study, as opposed to a library database or specific news websites, as it was deemed to possess the most overarching reach that allowed for the collection of a wide array of content to analyze. Pulling from over 4,500 news sources, Google News explains that they aim to “connect you with a broad array of perspectives to help you develop your own informed opinions”, thus this search engine provided a broad range of artifacts possessing varying perspectives to be examined within the study (Google News 2019; Lifewire 2019).

Due to the exploratory nature of this study, for each keyword combination search, the first ten to sixteen results that were not omitted as a result of the following exclusion criteria were subjected to examination. The lower range of ten results was established to ensure that all sets of search terms were significantly represented within the data set, while the upper range of sixteen results was established to prevent any one set of search terms from incorporating significantly more results than any another. Artifacts selected for analysis were required to be publicly accessible and published between September of 2017, and March of 2019. This allowed for the collection of artifacts that were published before, during, and after the storm. Due to the language capabilities of the researcher, articles written in languages other than English were excluded from the analysis. Additionally, to ensure that irrelevant artifacts were not included within the analysis, artifacts were reviewed and omitted if they did not possess explicit content regarding nonhuman animals in Puerto Rico during Hurricane Maria. If two different keyword search combinations included matching articles, they were only included within the data set once. This was found to be quite common, as artifacts appeared in several search results on a consistent basis.

For the first set of search terms, which included Puerto Rico, Hurricane Maria, and animals, five search results were omitted before a total of thirteen were collected for analysis. Of those omitted, one was excluded due to its date of publication, one was excluded because it became inaccessible throughout

the course of the study, and three were excluded due to their lack of relevance to the topic under investigation.

For the second set of search terms, which included Puerto Rico, Hurricane Maria, and wildlife, twenty-four search results were omitted before a total of eleven were collected for analysis. Of those omitted, one was excluded because it became inaccessible throughout the course of the study, two were excluded due to their date of publication, and seventeen were excluded due to their lack of relevance to the topic under investigation. Additionally, one result was omitted as it was not available to the public, and three results had already been collected and were therefore not included again.

For the third set of search terms, which included Puerto Rico, Hurricane Maria, animals, and rescue, twenty search results were omitted before a total of fifteen were collected for analysis. Of those omitted, two were excluded due to their date of publication, and six were excluded due to their lack of relevance to the topic under investigation. Additionally, twelve results had already been collected and were therefore not included again.

For the fourth set of search terms, which included Puerto Rico, Hurricane Maria, animals, and adoption, thirty-seven search results were omitted before a total of sixteen were collected for analysis. Of those omitted, one was excluded due to its date of publication, and seven were excluded due to their lack of relevance to the topic under investigation. Additionally, twenty-nine results had already been collected and were therefore not included again.

A total of one hundred and forty-one Google News search results from four separate searches were considered for inclusion in the study, out of which fifty-five artifacts were selected for analysis.

Data Analysis

As artifacts were reviewed for relevance and collected, they were also coded and analyzed for common themes. Following the methodologies laid out by Charmaz (2014), in her book *Constructing Grounded Theory*, codes and themes were analyzed as they naturally emerged from the data throughout

the process of analysis. This was a vital component of the study's methodology, as the research was exploratory, and intended to communicate artifact contents and descriptions as authentically, accurately, and genuinely as possible.

Data analysis was conducted through a two-phase process, beginning with initial coding that was followed by focused coding after initial codes had been developed. Through the process of initial and focused coding, codes and themes were developed and constructed into categories based on relationships observed between various codes and themes. These categories were then built up and analyzed in greater depth, and eventually came to make up the central findings of the research.

Within the initial coding process, line-by-line coding was conducted among a subset of the sample. A total of twenty artifacts were subjected to initial line-by-line coding. Line-by-line coding was utilized due to the multitude of topics that were covered throughout the data set. The use of line-by-line coding allowed each of these topics to be dissected, and prompted codes to be picked up that may have otherwise been overlooked. Another reason for the use of line-by-line coding throughout the initial coding process came from a note made by Charmaz (2014). Charmaz notes that line-by-line coding is likely to "reduce the likelihood that researchers merely superimpose their preconceived notions on the data" (Charmaz 2014: 125). Nonhuman animal care during instances of disaster is a topic of passion for the researcher conducting the present study. Therefore, this method was chosen to ensure that any biases or preconceived notions were identified if present, and mitigated within the study if found. Throughout the process of line-by-line coding, an attempt was made to stick closely to the actions that took place within the data, while staying open for gerunds that presented themselves and trying to represent the actions being carried out as accurately as possible.

Following initial coding, the coding process evolved into its second phase, which consisted of focused coding. Throughout focused coding, initial codes were built upon, and themes were identified linking various initial codes together in an overarching way. All articles within the data set were subjected

to focused coding. During focused coding, relationships between codes were considered, and several overarching themes were extracted from the data. Throughout this process, related codes were allowed to have differing titles. This was done to allow the codes to remain as representative as possible and provided insight as the study moved forward beyond focused coding.

In addition to the qualitative approaches outlined thus far, quantitative analyses of keyword combination search results also took place. Within these quantitative analyses, contents of artifacts were compared to one another to determine the quantities and frequencies of various species of nonhuman animals discussed and found to be present within keyword search results. Quantifying what types and how often various species were considered within the data led to the development of understanding what species were given precedence over others by the media sources examined.

Continuing to draw from Charmaz (2014), throughout the process of content and data analysis, consistent memoing took place to develop understandings of codes and themes identified within the data. Memos served as a critical analytical space within the study, as within them reflections, codes, themes, relationships between codes and themes, and findings were explored and developed. Memoing also allowed for reflection on codes and themes throughout the research process and promoted active engagement within the data throughout the process of data collection and analysis (Charmaz 2014).

A Derivative of Grounded Theory Approach

As exemplified above, much of the methodology implemented throughout this research project follows the methods laid out by Charmaz in *Constructing Grounded Theory*. Despite this methodological guidance, some departures have been made, making the study a derivative of the grounded theory approach. Charmaz herself, along with Glaser and Strauss (1967) before her, encourage grounded theorists to utilize her framework with an emphasis on "flexible guidelines, not methodological rules, recipes and requirements", suggesting that departures from her method are acceptable should they make sense within the research and lead to a more effective study overall (Charmaz 2014: 18). Charmaz goes

on to state that she "draws on excellent examples from qualitative studies whose authors do not claim grounded theory allegiance or whose writing only acknowledges specific aspects of the approach," which is precisely the route being taken here (Charmaz 2014: 18).

A primary departure from Charmaz's approach is the present study's consideration of literature before data collection and analysis, which Charmaz suggests avoiding to limit outside influence on the codes, themes, and categories that are developed. For this study, it was found that a brief literature review was necessary for several reasons.

First, before conducting the research, it was essential to ascertain whether or not any past researchers had examined the topic of nonhuman animals in Puerto Rico during Hurricane Maria in any way. This was found not to be the case, as the topic is mostly unexplored within the realm of academics. Additionally, it was essential to gain an understanding of other studies that have examined nonhuman animals during instances of disaster, to gain insight into the methodologies that are commonly employed to generate this type of research and to ensure that this study utilized the most effective methods possible. Reviewing literature for this purpose proved to be worthwhile, as Travers, Degeling, and Rock's (2017) comprehensive review of the literature surrounding companion animals during instances of disaster suggests that:

Qualitative studies can provide a normative background and delve further into people's values and beliefs about what should be done for animals during civil disasters and what obligations there are to the most vulnerable (human and nonhuman animal) in times of crisis. Qualitative methodologies will help give voice to emergency responders and companion-animal owners (Travers, Degeling, and Rock 2017:336).

The present study falls right in line with this suggestion, as it uses a mixed methods approach, primarily built around qualitative methodology, to examine how nonhuman animals have been reported on, described, and discussed throughout an extremely devastating disaster event. Though a literature review

was conducted before data collection and analysis, it was kept brief in an attempt to limit the influence of existing studies on the codes, themes, and categories developed within the present research. Following data collection and analysis, the literature review was built upon, supplemented, and used to examine codes, themes, and categories that were found to emerge from the data.

An additional departure from the Grounded Theory approach can be observed in the present studies' limited use of quantitative methodologies, as explained above. This departure was necessary to deeply dissect the hierarchical arrangement of nonhuman animals constructed by the media sources examined within the study. Without quantifying this aspect of the study, it would be difficult to understand precisely how particular nonhuman animals were given precedence over others, as much of this president boils down to the mere inclusion or exclusion of various species. Within the present study, quantifying this inclusion and exclusion was deemed to be the most effective way to communicate what the data were presenting.

CHAPTER THREE: LITERATURE REVIEW

While a modest amount of academic literature regarding nonhuman animals during instances of disaster exists, inquiry into the case of nonhuman animals in Puerto Rico during the event of Hurricane Maria is absent from scholarly discussion. The following literature review will provide a brief overview of the most heavily cited extant literature regarding nonhuman animals during instances of disaster that are relevant to the current study, and will clarify how the present study contributes to this body of research.

Travers, Degeling, and Rock (2017) conducted a comprehensive review of the literature regarding nonhuman companion animals during instances of natural disaster in relation to the human-nonhuman animal relationship. This review strictly examined companion animals during instances of disaster, while the current study extends beyond companion animals by including stray nonhuman animals due to the multitude of them, approximately 500,000 dogs and one million cats, present on the island of Puerto Rico. Nevertheless, Travers et al.'s review informed this study with crucial insights about how nonhuman animals and phenomena surrounding them have been included within scholarly discussion. Within their review, Travers et al. examined articles related to nonhuman animals during instances of disaster between 2004 and 2014, and generated common findings among the articles as well as suggestions for future research within the realm of nonhuman animals during instances of disaster. Travers et al.'s review resulted in the identification of several key themes common within the study of nonhuman animals during instances of disaster, which will be explained here and supplemented with additional studies that were not included in their review.

Significant themes identified through Travers et al.'s review include nonhuman animals functioning as risk factors for humans, as well as nonhuman animals being at risk themselves. Within the extant literature, nonhuman animals have been found to function as risk factors for humans through their influence on evacuation behavior, the impacts of nonhuman animal loss on humans, and the risk created

for responders. Nonhuman animals have been found to function as a risk to themselves as a result of a variety of factors outside of their own control, including being abandoned, inadequate human preparation, and lack of consideration while evacuating. Because this study focuses on the human-nonhuman animal relationship in regard to an instance of disaster, and because risks to humans often include and result from risks to nonhuman animals, the forms of risk in which nonhuman animals have been found to function as risk factors for humans through their influence on evacuation behavior, the impacts of nonhuman animal loss on humans, and the risk created for responders and pet caregivers will now be elaborated upon in greater depth.

Nonhuman Animal Influence on Evacuation Behavior

Nonhuman animals have been found to influence evacuation behavior in a variety of ways. As researchers have suggested, it is not the mere guardianship of companion animals alone that influences the propensity not to evacuate, but instead it is often other reasons related to companion animals that influence one's decision to leave or stay when ordered to evacuate as the result of a disaster event (Irvine 2006; Edmonds and Cutter 2008; Irvine 2009; Brackenridge et al. 2012; Hunt et al. 2012). Within their study, Brackenridge, Zottarelli, Rider, and Landy (2012) found that 24.5% of their sample cited pets as a reason why they chose to evacuate, while 38.5% of their sample cited pets as their reason for not evacuating during Hurricane Ike. This suggests that nonhuman animals can both encourage and discourage evacuation, and in certain circumstances, among a relatively large amount of their sample, nonhuman animals influenced evacuation behavior in a way that led respondents not to heed evacuation notices.

Reasons related to pets and companion animals are often cited as reasons to resist or defy an evacuation, due to the difficulty that comes along with successfully evacuating with nonhuman animals. These reasons often include factors such as proper shelter, transportation ability, threat perception, and the costs of evacuating with animals (Edmonds and Cutter 2008; Irvine 2009; Brackenridge et al. 2012;

Hunt et al. 2012). Insights gained from these studies relate directly to the study at hand, as many Puerto Ricans were forced to grapple with evacuation decisions involving their pets and nonhuman animals throughout the disaster event of Hurricane Maria.

Impacts of Nonhuman Animal Loss on Humans

Literature has also examined the detrimental effects present among humans that can result from nonhuman animal loss during instances of disaster. Hunt, Al-Awadi, and Johnson (2008) conducted interviews with survivors of Hurricane Katrina and found that companion animal loss often resulted in acute stress, peritraumatic dissociation, symptoms of depression, and displays of PTSD symptoms. Their findings also indicated that the forced abandonment of a pet during Hurricane Katrina functioned as a "significant stressor" among evacuees. Hunt et al.'s study also took into account additional stressors such as the loss of a home and found that even while controlling for outside stressors, those who lost pets during the storm reported higher levels of adverse physiological and depressive symptoms than those who did not lose a nonhuman animal. Building upon this finding, the study also indicated that those who kept their homes but lost their pets had the highest levels of depressive symptoms of the entire sample.

The results of Hunt et al.'s study were also supported by a study conducted by Lowe, Rhodes, Zwiebach, and Chan (2009), which found that nonhuman animal loss during disaster events results in significant physiological impacts among associated humans. In addition to the distressing effects of losing a nonhuman animal pet in general, those who lost pets within their study also lost the stress relieving function that pets had provided to them before their loss. The adverse physiological conditions associated with losing a pet were found to be most significant among respondents with lower levels of social support, as well as younger participants within the study (Lowe et al. 2009).

Leslie Irvine (2009) also provides quality evidence of the emotional toll that forced abandonment can have on individuals during instances of disaster. Among other similar stories, Irvine explains the

impact that the forced abandonment of their dog had on a Louisiana couple during Hurricane Katrina:

Everyday she's haunted with the recurring image of hearing her own cries and screams as she lay on a stretcher, seeing Lily released by the guardsmen and running away from the Convention Center, alone and confused. "Oh my God, I just about lost it", Dale recalls (Irvine 2009: 24).

Within her book, Irvine also explains the emotional turmoil that took place as thousands of caregivers attempted to reunite with their lost nonhuman animals. This number was so high because approximately twenty percent of Hurricane Katrina survivors had to evacuate without their companion animals, according to a Gallup Poll of adult Katrina survivors (Irvine 2009). These examples demonstrate the devastating impact that animal abandonment can have on individuals during instances of disaster, which often remains with them for an extensive period of time following the event. This is especially so when the abandonment is forced, rather than a choice made by the caregiver. The literature mentioned above aids in providing context to the current study, as many Puerto Ricans likely experienced adverse psychological and physiological effects as a result of their experiences with nonhuman animals during Hurricane Maria.

Nonhuman Animals as Risks to Human Responders and Pet Caregivers

Several existing studies have examined the risks that nonhuman animals pose to both human responders, such as emergency response officials, and human pet caregivers (Heath et al. 2001; Irvine 2004; Irvine 2009; Mei et al. 2013; Thompson 2013; Thompson 2018). In their study, Heath, Voeks, and Glickman (2001) found that 40.7% of their sample of pet caregivers attempted to return to their homes to rescue pets left behind during an evacuation caused by a hazardous chemical spill. Similarly, Mei et al. (2013) found a similar trend of pet caregivers returning post-disaster in attempts to rescue animals following the Merapi volcanic eruption.

Most relevant to the present study, Leslie Irvine (2006) composed a report on her experiences volunteering in animal shelters in Louisiana following Hurricane Katrina. This report was also supplemented by Irvine's (2009) book, within which she explains the devastating impact that Hurricane Katrina had on both humans and nonhuman animals. As Irvine has explained, many residents who evacuated before the storm left nonhuman animals behind, often due to forced abandonment, insufficient shelters, and transportation that would not allow nonhuman animals. Many residents rescued in flood waters and those leaving shelters on public transit were told that their nonhuman animals could not be rescued with them and that they would be rescued later on, resulting in many forced abandonment situations. While it is undoubtedly the case that some evacuated residents went back in attempts to rescue their nonhuman animals on their own, a high number of the nonhuman animals abandoned were left for emergency response teams to recover, and emergency authorities delayed many of these response teams. This not only left the abandoned animals waiting in limbo to be saved, and often dying, but also put emergency responders at risk when they were eventually allowed to rescue the nonhuman animals from storm-ravaged areas.

Unfortunately, along with the vast amount of nonhuman animals that were rescued by response teams, many were also killed inhumanely by emergency authorities during the delay in response, and a high number of these authorities never faced repercussions for their actions (Irvine 2009). In the end, only twenty-three hundred of the fifteen thousand lost nonhuman animals were able to be reunited with their caregivers following Hurricane Katrina. As Irvine suggests, more robust planning and education surrounding proper care for nonhuman animals during instances of disaster and in general stands the potential to limit the risks posed to both humans and nonhuman animals.

As the aforementioned literature suggests, when pet caregivers make a choice to re-enter disaster areas in search of their nonhuman animal companions, they not only put themselves in harm's way, but also pose a risk to the emergency response officials who are ultimately responsible for rescuing these

caregivers should they become snared in a compromising situation. Additionally, the abandonment of animals during instances of disaster also places emergency response teams at increased risk, as following the disaster event they are often tasked with rescuing the nonhuman animals left behind. Some emergency response authorities feel the need to take a more callous approach and kill abandoned nonhuman animals inhumanely on the spot by shooting them. More often than not, these authorities do not face repercussions. This literature helps to provide a bit of context for the study at hand, as nonhuman animal rescue and animal abandonment were undoubtedly present within Puerto Rico during Hurricane Maria.

CHAPTER FOUR: RESULTS

Nonhuman Animal Abandonment

Throughout a large subset of the artifacts examined, a common theme found to be emergent was discussion of nonhuman animal abandonment. This theme presented itself as a complex, multifaceted issue, with nonhuman animal abandonment occurring in a variety of forms stemming from varied causes. Regardless of the method or cause of abandonment, the phenomenon was reported to be a significant driving force behind the large number of stray nonhuman animals present in Puerto Rico. While many articles explain that the large number of strays was an issue prior to the storm, they also explain that the rapid uptick in abandonment surrounding Hurricane Maria propelled that number upward in a rather short timespan. For example, an article written by ABC 6 News explained that the island has "the existing population of stray animals that was always there, but now they've had this massive impact of formerly owned animals that were abandoned" (Pitts 2018). The impact of nonhuman animal abandonment surrounding the storm is also echoed in a quote by Dellymar Bernal, president of the Saint Francis of Assisi Animal Sanctuary's board of directors, who explained "Our situation is dire because the number of abandonments has tripled in recent weeks... We know the abandonments are going to continue or worsen. ... Unfortunately, Hurricane Maria is still claiming animals as victims" (Associated Press 2017). As these quotes show, the artifacts examined reported stark upticks in nonhuman animal abandonment during the time that followed Hurricane Maria.

The reasons behind the reported nonhuman animal abandonment occurring in post-Maria Puerto Rico come in a variety of forms and stem from a variety of causes. Some reports described pet caretakers attempting to bring their nonhuman animals to overcrowded shelters on the island, some described nonhuman animals being left on the streets to fend for themselves, some were reportedly tied to trees or left inside of homes, and one explained situations within which caretakers were forced to abandon nonhuman animals at airports as they attempted to flee the island. With the exception of a single case that

described nonhuman animals being abandoned at airports due to a federal aviation rule that barred nonhuman animals over 20 pounds from flying, a majority of nonhuman animal abandonment was explained to be resulting from two main causes; economic hardship and desires to be free from the responsibility of caring for a pet during such dire times.

Many instances of nonhuman animal abandonment were reported to be caused by the despairing economic conditions present on the island that were exacerbated by the devastating amount of damage caused by Hurricane Maria. To provide a bit more context as to just how despairing the situation was, it was reported that over 30,000 people lost their jobs as a result of Hurricane Maria, and the damage from the storm essentially brought the islands economy to a screeching halt due to the mass amounts of infrastructure damage present. The rough economic conditions were reported to be the cause of much of the animal abandonment occurring in Puerto Rico. In an article written by WLRN Public Radio and Television, Claribel Pizarro, Executive Assistant at the Humane Society of Puerto Rico (HSPR) explained that many nonhuman animal caretakers were bringing their pets to the HSPR for varied reasons, including “a lot of economic issues” (King 2018). Similarly, an article written by Newsweek reported that “Now, animal shelters witness cats—even a pet pig and a fighting cock—after their owners decided to leave the island due to economic hardships or opted to forsake their animals as they try to recover from the tempest” (Valencia 2017).

In addition to the intensified economic hardships present in Puerto Rico following Hurricane Maria, several artifacts also reported a general desire to be rid of the responsibility of caring for a pet in the tough times that followed the storm. This desire to be free from the responsibility of pet caretaking is exemplified well by another quote from HSPR Executive Assistant Claribel Pizarro, where she states that “There are also owners... who simply don’t want the responsibility of taking care of their pets anymore” (King 2018). Resulting from various causes and motivations, the artifacts examined indicate that animal abandonment was widespread in Puerto Rico following Hurricane Maria.

Insufficient Shelters, Damaged Shelters, and Lack of Resources

Discussion of nonhuman animal shelters was an additional theme reported on throughout the artifacts in the data set. This discussion came in several forms, including discussion of insufficient shelters, damaged shelters, and a general lack of resources present within many of the shelters on the island.

Throughout the data set, nonhuman animal shelters were reported as being significantly damaged by Hurricane Maria. This comes as no surprise, as infrastructural damage was extremely widespread throughout the entire island, and many structures were severely damaged or destroyed by the storms 155 mile per hour winds. Animal shelters reportedly experienced damage in the form of structural damage, destroyed resources such as cages and food, and perhaps most devastating of all, flooding. Flooding was reported to be extremely widespread throughout the animal shelters in Puerto Rico, and resulted in massive amounts of damage. Some shelters experienced flooding so bad that they were reportedly keeping nonhuman animals on their roofs so that they could stay dry.

The damage reported at many shelters on the island is summed up well by the following quote from the New York Post which states “Volunteers at one had to wade through waist-deep waters carrying dogs to safety, while other shelters lost their roofs, food and cages” (Associated Press 2017). This damage becomes even more impactful as one considers that many of the shelters affected were already experiencing resource shortages to begin with. The cumulative impact of the damage resulting from the storm and resource shortages that existed prior are demonstrated well by the following quote from a NewsWeek article which states:

“The shelters already faced problems housing stray animals even before the hurricane that pummeled the U.S. territory in September. Some of Puerto Rico’s five government-run shelters and more than 30 nonprofit animal centers lost their roofs, food and cages,

but the state of these facilities has not deterred pet owners from leaving them there”
(Valencia 2017).

This quote explains that despite the damaged facilities and lack of ability to care for nonhuman animals due to resource shortages, people have still been abandoning animals at shelters. This goes on to create an even more strenuous situation as shelters that were already struggling are inundated with additional nonhuman animals that they do not have the capacity to facilitate.

To go along with the devastating damage and lack of resources present at many of the nonhuman animal shelters on the island, only one operates according to a no kill policy. This becomes troubling because the more overcrowded a shelter without a no kill policy gets, the more animals are ultimately euthanized. This harsh reality is summed up well by a quote from a Providence Journal article that states that “if a dog is taken to one of the five municipal shelters in Puerto Rico, it likely won’t leave alive. The euthanasia rate is 99 percent at those shelters, according to the website” (Damon 2018). The lack of no kill shelters on the island has led the one no kill shelter, the Humane Society of Puerto Rico animal shelter, to be inundated with even more abandoned animals as former nonhuman animal caretakers hope to leave their pets at a shelter where death is not near certain. This is shown in a quote from the aforementioned Newsweek article which states “At least 250 people have put their pets on the list for the Humane Society’s no-kill shelter, which has a capacity of 80 animals but currently has 120. Some live in cages on the roof because there is no room inside” (Valencia 2017). This quote effectively demonstrates the demand for space at the island’s only no kill shelter, and also shows what happens as no kill shelters become vastly overcrowded. Here, animals were literally in cages on the roof due to the lack of space and flood damage. While living on a roof at a no kill shelter is better than being euthanized at the alternative, it is not a sustainable method through which nonhuman animals can be housed. As nonhuman animal abandonment occurred surrounding Hurricane Maria, shelters that were already under great strain due to

damage and resource shortages were placed under even more pressure to care for the massive influx of nonhuman animals that entered their system.

Collaboration Between Nonhuman Animal Welfare Organizations

Another theme found to be emergent from the data was discussion of collaboration between nonhuman animal welfare organizations, along with the benefits that this collaboration resulted in. As representatives from various nonhuman animal welfare organizations were interviewed, many cited the collaboration between organizations as key to the success of various relief efforts that have taken place. These efforts ranged from basic supply drives and deliveries, to the complex Spay-A-Thon initiative put on by the Humane Society of the United States, which will be outlined in greater detail below. Some of the collaboration also came in the form of celebrity endorsement. For example, celebrity dog trainer Cesar Millan, host of the TV show Dog Whisperer, was recruited to bring attention to the efforts taking place and to provide encouragement for volunteers participating. Aside from a few exceptions, a majority of the collaboration that took place occurred between various nonhuman animal welfare organizations both from the U.S. mainland and the island of Puerto Rico.

Collaborative efforts that took place ranged in form, size, and methods. Some consisted of supply drop offs to the island, some consisted of nonhuman animal transport out of Puerto Rico, and some consisted of spay/neuter initiatives such as the Spay-A-Thon. Of those that involved flying supplies into the island and transporting animals off the island, donors and volunteer pilots were reported to be critical collaborators, as they were able to provide the means (in the form of planes) to transport supplies and nonhuman animals, as well as expertise (in the form of pilots flying the planes.) Additionally, nonhuman animal welfare organizations were major players in this type of collaborative effort as many were responsible for organizing, collecting donated supplies, as well as taking in nonhuman animals that returned to the U.S. mainland who were in need of shelter, veterinary care, and adoption. The Spay-A-Thon initiative was much larger in scale, and was reported to bring together twenty six nonhuman animal

welfare organizations to spay and neuter thousands of nonhuman animals, and create lasting spay and neuter infrastructure so that the practices could continue once the initiative ended.

As noted above, many different nonhuman animal welfare organizations took part in a variety of collaborative efforts surrounding Hurricane Maria, however the aforementioned Spay-A-Thon initiative was perhaps the most collaborative of all. Managed by the Humane Society of the United States, the Spay-A-Thon initiative brought together a wide variety of animal welfare organizations and veterinarians to conduct a wide scale spay and neuter campaign across the island. Details of the Spay-A-Thon initiative itself will be discussed in greater detail in the section that follows, so here a focus will be placed on the collaborative efforts that made it possible. Participants in the Spay-A-Thon explained that the collaborative spirit among participants was extremely important for the success of the initiative as a whole. A key message found within many artifacts stresses that by working together, the organizations were able to accomplish more than each one could do on their own. This sentiment is summed up well by the following quote from Animal Rescue Fund veterinarian Dr. Christine Asaro who was interviewed stating “We are excited and looking forward to the combined efforts of our local organizations to help animals in need, namely those of Puerto Rico. Together we can achieve much more than if each of us acts alone” (Finn 2019). Ultimately, a majority of the nonhuman animal welfare organizations mentioned within the data set cited collaboration with other nonhuman animal welfare organizations as key to the success of relief efforts that were carried out.

Spay/Neuter Practices

Discussion of spay and neuter practices was another theme found consistently throughout the artifacts examined. These discussions generally centered around two main aspects of spay and neuter practices within Puerto Rico, including a basic lack of these practices as well as new efforts to make these practices more common place and sustainable.

Overall, the artifacts reported that the practice of spaying and neutering nonhuman animals, both domestic and stray, is quite lacking in Puerto Rico. Much of this was often found to be explained as a result of the sheer amount of nonhuman animals present on the island, especially those that are stray. Because of the large quantities of stray animals present on the island, spay and neutering resources are stretched thin, which means that not all nonhuman animals are able to receive the treatment needed to manage populations. As a result, nonhuman animals on the island are able to reproduce at rapid rates, which results in an even larger population of stray nonhuman animals. This in turn stretches the resources even thinner, creating a cyclical situation in which more and more nonhuman animals are born into a system that is already under great strain. This situation is exemplified well by the following quote from the Providence Journal, which states “There are so many stray dogs in Puerto Rico because spaying and neutering is not widely practiced, leading to a never-ending cycle of reproduction” (Damon 2018).

In an effort to curb this large number of unspayed and unneutered nonhuman animals, the Humane Society of the United States (HSUS) launched an initiative called Spay-A-Thon for Puerto Rico following Hurricane Maria, which aimed to spay and neuter as many nonhuman animals as possible throughout the course of the initiative. As reported by an article in the Cornell Chronicle, “In addition to treating animals, a core component of the initiative is to create a lasting spay/neuter infrastructure in Puerto Rico” (Cordova 2018). This sustainability factor was presented widely across artifacts that discussed the Spay-A-Thon initiative. Additionally, the Spay-A-Thon also aims to increase veterinary education throughout the island, which is intended to increase the numbers of nonhuman animals that are spayed and neutered in the future. To carry out the initiative, the HSUS recruited a wide variety of nonhuman animal welfare organizations from both Puerto Rico and the U.S. mainland. One article written by Patch described these volunteer veterinarians as “heroes”, signifying that they place great value in the effort being carried out (Finn 2019). Patch explains the effort stating that “The Spay-A-Thon in Puerto

Rico is an event that spans many months, incorporates dozens of animal charities, and has a goal of spaying and neutering 30,000 owned and free roaming dogs and cats” (Finn 2019).

Reporting on the Spay-A-Thon constructs the idea that the initiative has been quite successful thus far, as many reports explain that goal numbers have been surpassed by the veterinarians present on the island. Within the Cornell Chronicle, Elizabeth Berliner was quoted explaining that “We treated exactly 600 animals in seven days, exceeding our initial goal of 500” (Cordova 2018). Ultimately, the Spay-A-Thon was found to be reported on quite positively, carrying out goals of assisting with hurricane recovery, making the satos of Puerto Rico more controllable in regard to population numbers, and in effect also preventing various diseases that commonly result from large numbers of stray nonhuman animals. This sentiment is summed up well by the aforementioned Cornell Chronicle article which went on to state that:

“Providing these services to thousands of animals at no cost to their owners or the shelters will help both the people of Puerto Rico and their pets recover. It will also reduce the risk of transmission of zoonotic diseases like rabies and leptospirosis that comes from a high density of stray animals” (Cordova 2018).

The Spay-A-Thon for Puerto Rico was able to accomplish its goal by spaying and neutering thousands of nonhuman animals and begging to set up lasting infrastructure to be able to continue doing so, however, its impact was likely smaller than the artifacts examined make it out to be due to the sheer number of unspayed and un-neutered animals present on the island. This is an idea that will be addressed in greater detail within the discussion section later on.

Positive Descriptions of Satos

An additional emergent theme found within several artifacts centers around positive descriptions of the satos in Puerto Rico. While some of the artifacts described a general disregard and lack of interest for satos among the residents of Puerto Rico, many described the dogs as friendly, affectionate, and

adaptable, painting them in quite a positive light. One rescuer explained an encounter with a sato while visiting Puerto Rico on a nonhuman animal rescue mission stating “When we met them in October they were pretty friendly. Laura went on her back and gave us belly and everything, immediately” (CBS New York 2019). This description exemplifies the friendly demeanor that many satos were described as possessing. Similarly, Potter League Executive Director Brad Shear explained that “What struck him about Puerto Rico was the volume of dogs in the shelters with friendly temperaments” (Damon 2018). These reports are worthy of consideration as they shed positive light on a population of nonhuman animals that may otherwise be thought of as unruly and untamed due to the way that many tend to view stray animals as a result of how they are often depicted through various forms of media and folklore. Creating this positive view is helpful in lending support to the various adoption efforts taking place on behalf of the satos, as constructing a positive view of the nonhuman animals will likely go a long way in making them appear more adoptable once relocated.

Upon bringing rescued satos to New York, one rescuer explained that “I figured they would freak out at the snow, but a lot of them will go out and run and run and run in it. They adapt pretty quick” (Hauptman 2018). While some may expect these dogs to be unfit for life outside of their native tropical climate, various interviewees from the artifacts explain that the satos are quite adaptable and are able to get by fine most everywhere they end up. This is an important description to consider, as knowing and disseminating this information may make additional shelters more open to the idea of welcoming these nonhuman animals, where as prior to these articles they may have been deemed as unfit depending on the shelter’s location and local climate. While it must be considered that a portion of the artifacts within the data set were written in an attempt to raise awareness to the fact that there are countless satos in need of rescue, a home, and adoption, the positive descriptions of these dogs still stands out as significant phenomena worthy of attention.

Bringing Nonhuman Animals to the U.S. mainland

Unsurprisingly, another major theme discussed within the artifacts was the phenomena of bringing nonhuman animals to the U.S. mainland. Nonhuman animal transport to the U.S. mainland was reportedly carried out on both small and large scales, ranging from individual nonhuman animals traveling to the mainland with a sole rescuer, to groups of nonhuman animals traveling to the mainland with teams of rescuers. Many of the larger scale transports were carried out by a variety of nonhuman animal welfare organizations, while the individual transports often occurred as independent individuals traveled to the island and decided to take a nonhuman animal who caught their attention back with them. It was also quite common for nonhuman animal welfare organizations to work in collaboration with one another while transporting nonhuman animals, which is a theme that was examined earlier. Regardless of the collaboration factor present, transport to the mainland was without a doubt a significant theme present in the data.

In addition to the abundance of strays present on the island following Hurricane Maria, another significant influence that led groups to fly nonhuman animals to the U.S. mainland was Puerto Rico's lack of no-kill nonhuman animal shelters. No-kill nonhuman animal shelters are shelters that hold a policy of not euthanizing animals unless deemed medically necessary. Of the shelters on the island of Puerto Rico, only the Humane Society of Puerto Rico operates according to a no kill policy. Many of the artifacts examined within this analysis were quick to note that many of the other shelters on the island have considerably high euthanasia rates, with some close to 99%. Many animal welfare agencies explained that this created a significant need to get nonhuman animals off of the island. An article written by Newsweek explained that:

“After the hurricane, several groups began to fly pets to no-kill animal centers in the continental U.S. On Sunday, the Animal Rescue Fund of the Hamptons in Long Island, New York, received more than 100 dogs and cats... “By saving these 130 animals, that

means that we're really able to help the shelters down there bring another 130 animals off the streets of Puerto Rico," said Scott Howe, Director of the Animal Rescue Fund of the Hamptons" (Valencia 2017).

Among the nonhuman animal welfare organizations that were reported to be performing transports back to the mainland, many received help in the form of donated resources which allowed them to have what they needed to successfully move the nonhuman animals. This was presented as being quite necessary, as several reports noted the high costs of getting nonhuman animals from Puerto Rico to the U.S. mainland. In an article written by CBS New York, it was estimated that it cost approximately \$1,000 to bring each nonhuman animal over (CBS New York 2019). Donated resources came in a multitude of forms, ranging from rented airplanes, to crates, to food, and were donated from a variety of sources. One animal welfare organization, Forever Paws based out of Fall River Massachusetts, received a donation in the form of a private jet that made two trips to Puerto Rico and rescued over 100 nonhuman animals. In this instance, the rented jet was donated by an anonymous donor.

Due to the lack of no-kill policies, high euthanasia rates, and lack of resources among nonhuman animals shelters within Puerto Rico, nonhuman animal welfare agencies deemed it necessary to evacuate as many nonhuman animals out of Puerto Rico as possible. This effort was greatly aided by donations that provided nonhuman animal welfare organizations with the supplies needed to complete transports out of Puerto Rico.

A Second Chance at Life for Nonhuman Animals

What all of the nonhuman animal welfare organizations involved in transporting nonhuman animals back to the U.S. mainland and facilitating adoption efforts focused on was providing a brighter, more optimistic future for the nonhuman animals they were aiding. Many of the organizations framed their efforts as attempts to provide these animals with a second chance at life. An example of this sentiment can be observed in founder and president of Paws 4 Survival Nicole Dipaolo's statement in

which she said “It’s their second chance at life, and their only chance at freedom” (Szaniszlo 2018). This statement was made while Dipaolo was explaining that foster homes had been established for a group of nonhuman animals brought to the mainland who were awaiting adoption. Similarly, Casey Fredette, shelter director at Forever Paws Animal rescue explained that “We have a mission at Forever Paws to give animals a new leash on life, and so we're able to give at least a few of them a new leash on life and give them happy new lives in New England” (Pitts 2018). This statement was made while Fredette was discussing a group of nonhuman animals that had been brought over to the U.S. mainland.

Though it may seem obvious, it is important to understand that the artifacts demonstrate a clear desire to improve the lives of the nonhuman animals affected by Hurricane Maria, which is done by providing them with a new home in a location where necessary resources will be available to them. More often than not, this is done through adoption efforts that often take the nonhuman animals out of Puerto Rico through the methods discussed in the above section “Bringing Nonhuman Animals Back to the U.S. Mainland.” As discussed above, many nonhuman animal welfare organizations often work in collaboration to facilitate adoption efforts and place nonhuman animals in foster homes until they are ready for adoption. Reports indicate that the nonhuman animals brought out of Puerto Rico were brought to a variety of geographic locations throughout the mainland U.S. Adoption efforts that include bringing nonhuman animals out of Puerto Rico also help to reduce some of the strain currently placed on shelters on the island, as they open up space and resources to be used for additional nonhuman animals there. Despite their methods of operation, all of the nonhuman animal welfare organizations involved in rescue operations in Puerto Rico have a shared goal of providing the nonhuman animals they aid with an improved life situation in a place where there are sufficient resources to ensure their well being.

Mentions of Nonhuman Animal Species (Quantitative Analysis)

Table 1, shown below, displays the frequencies by which various species of nonhuman animals were mentioned within the artifacts examined. Regardless of how many times each species was mentioned within a particular artifact, they were only counted once. For example, if an artifact mentioned dogs eight times, dogs were only given one additional count in the table for that artifact. Additionally, only specific mentions of nonhuman animal species were included here. Almost all artifacts contained mention of the blanket term “animals”, therefore this count was not included in the analysis. The term pets was included in the analysis, though situationally. If there was no mention of a specific species of nonhuman animal, the term pets was used to describe them. This was the case within two artifacts.

Table 1: Mentions of Nonhuman Animal Species

Nonhuman Animal Species	Number of Mentions (Frequency Within Data Set)
Dog	41 (74.5%)
Cat	31 (56.3%)
Puerto Rican Parrot	11 (20%)
Pig	4 (7.3%)
Chicken	3 (5.5%)
Horse	3 (5.5%)
Red Tailed Hawk	3 (5.5%)
Lizard	2 (5.5%)
Pets	2 (5.5%)
Bass (Fish)	1 (1.8%)
Bioluminescence	1 (1.8%)
Cow	1 (1.8%)
Deer	1 (1.8%)
Frog	1 (1.8%)
Goats	1 (1.8%)

Sea Turtle	1 (1.8%)
Sharks	1 (1.8%)
Sheep	1 (1.8%)

As Table 1 clearly displays, dogs received the most amount of discussion within the data set, as they were mentioned within approximately seventy-five percent of the artifacts examined. Closely behind dogs were cats, who were mentioned in approximately fifty-six percent of artifacts. After cats come the Puerto Rican parrot, mentioned in twenty percent of the artifacts. Following the Puerto Rican Parrot, a variety of other species of nonhuman animals were mentioned at low frequencies. These species range from pigs, to deer, all the way down to bioluminescence.

While Table 1 displays a large variety of species of nonhuman animals, a majority of them were only mentioned once within the entire data set. Additionally, many were used in an extremely brief nature, with little discussion surrounding. In these instances, the inclusion of these species was often present to either make comparisons with other species, or in some cases, to display that it was not just dogs and cats that were affected. Here it is important to note that despite the diversity displayed within Table 1, discussion of species other than dogs, cats, and the Puerto Rican parrot was extremely limited.

Though the Puerto Rican Parrot was mentioned a considerable amount of times, the discussion surrounding this species was not analyzed heavily within the present study. Discussion of the Puerto Rican Parrot dominated the search results that included the terms Puerto Rico, Hurricane Maria, and wildlife. Though it was present within the data set, this is a topic that was not addressed here as the focus was on species of nonhuman animals that were more likely to be impacted as a result of human involvement, action, or inaction. This is not to say that humans played no role in the outcomes that the Puerto Rican Parrots experienced, however, the data indicated that much of their struggles following Hurricane Maria were the result of habitat destruction and food scarcity caused by the storm's damage to forests and trees. While discussion of these birds did explain that they have struggled in the past due to

human initiated forest clearing, a majority of discussion surrounding them centered on the habitat destruction caused by Hurricane Maria. For these reasons, a decision was made to place focus on species of nonhuman animals more likely to be directly affected by human involvement, action, or inaction.

An additional aspect of the data set worthy of consideration here are the locations where the reporting within the artifacts examined took place. Detailed information on media source locations and locations that were reported on can be found in the appendix. As the appendix shows, some artifacts reported on areas throughout Puerto Rico while others reported on isolated cities or areas within the territory. Of those that reported on a singular location, many tended to be located within a moderate distance from San Juan, the territories capital, in cities such as Arroyo, Piñones, and Carolina. The city of Yabucoa was also mentioned frequently, as it contains the beach Playa Lucia, also dubbed “Dead Dog Beach”, where nonhuman animals are commonly abandoned during both times of peace and during instances of disaster. Locations reported on within the data set are important to consider as they glean insight into areas where issues related to nonhuman animals were given weight, as opposed to areas where human issues were the sole topic of discussion. As displayed, these areas often tended to be located in proximity to the capital city of San Juan, suggesting that more distant locations and non-urban settings may have had altogether different experiences in relation to nonhuman animals than those found and discussed here due to the varying issues, storm impacts, and storm outcomes that they faced.

The inclusion, exclusion, and frequency of inclusion of various species of nonhuman animals displayed within Table 1 indicates that clear precedence was given to dogs and cats. This precedence displays a type of hierarchical arrangement in the ways that the media sources examined, view, and, in most cases, advocate on behalf of different species. This hierarchical arrangement will be dissected and discussed further within the section below.

CHAPTER FIVE: DISCUSSION

Beginning this discussion, it would be remiss to not make a special point to commend the exceptional work carried out by the volunteers, nonhuman animal welfare organizations, veterinarians, and others who gave and continue to give their time and effort to aid the nonhuman animals in need within Puerto Rico. The Spay-A-Thon, animal evacuations, and all other relief efforts went to great lengths to help thousands of nonhuman animals in dire need of assistance. This type of work is not easy and often carries a hefty emotional load, making those involved exceptional in their own right. The actions of all who contributed their time, resources, and effort are nothing short of heroic and are greatly appreciated.

Ultimately, the results of the content analysis conducted here indicated that more robust planning and resource allocation is needed for nonhuman animals surrounding instances of disaster in Puerto Rico. While the efforts and initiatives that have taken place thus far are commendable and worthy of praise, they will ultimately be undone if lasting and sustainable planning and resource allocation is not established for the future. Regardless of how many nonhuman animals were evacuated from the island or sterilized as a result of the Spay-A-Thon, similar efforts are needed consistently for the foreseeable future to ensure that the cyclical situation involving mass stray nonhuman animal reproduction does not continue. Additionally, a solution must be found to address the animal abandonment that was experienced following the storm. Greater amounts of planning and resources should help in regard to this specific issue, however, an educational campaign to inform people of the likely fate of abandoned nonhuman animals may also result in positive contributions to help address the issue.

The results have indicated that Puerto Rico clearly needs additional resources to enhance resource allocation and facilitate planning that takes place in the future. The resources that are needed span across realms of nonhuman animal needs, from basic resources such as food and medications, to more advanced resources such as storm resistant shelters and a lasting spay and neuter infrastructure. As prior literature

has suggested, nonhuman animal shelter destruction during disaster events is not an uncommon occurrence, therefore it is important that in the future these structures are built to be as resilient as possible and equipped with the resources needed to weather storms (such as window shutters and flood resistance), so that they are able to operate and provide essential services following the events. This can be said of all nonhuman animal shelters, regardless of geographic location.

A lasting spay and neuter infrastructure is especially important to establish as the exceptionally large number of stray nonhuman animals present in Puerto Rico is an issue that will grow and persist regardless of whether or not another storm impacts the island in the future. It is essential that proper spay and neuter practices become widespread throughout the island, whether the animals are stray or domesticated. The Spay-A-Thon initiative was a terrific effort that was able to help thousands of nonhuman animals, however, it ultimately resulted in the sterilization of a small fraction of the nonhuman animals on the island, and only began setting up a lasting spay and neuter infrastructure. Continuing to create a lasting spay and neuter infrastructure will allow veterinarians to continue treating animals consistently year round, which will eventually help get the island's stray nonhuman animal population down to a more sustainable level.

The media sources examined here highly praised the efforts and results of the Spay-A-Thon, evacuation missions, and other initiatives, as they ought to, however they likely had a marginal impact overall due to the sheer amount of nonhuman animals in need. Media sources would do well by placing a greater emphasis on the massive scale of the issue in relation to the efforts that are taking place. This would present the issue in greater light, and help audiences understand that even with the tremendous efforts taking place, little is actually being done in the grand scheme of the situation. Because there are still so many unsterilized stray nonhuman animals, their populations can only be expected to increase over time until a massive systemic change takes place. When you have over one and a half million stray nonhuman animals, it is difficult to make a dent. Spay-A-Thon like efforts must continue on the island in

order to create the change needed, and additional training and spay and neuter resources must become more commonplace within Puerto Rico so that the practices can continue in a widespread fashion without outside assistance. It is crucial that a lasting, competent spay and neuter infrastructure be established in Puerto Rico.

Additional no kill nonhuman animal shelters would also serve the nonhuman animals of Puerto Rico well. As mentioned, Puerto Rico currently only has one no kill shelter on the entire island, that is the Humane Society of Puerto Rico animal shelter. All of the other shelters practice euthanizing animals at extremely high rates due to the vast numbers of nonhuman animals that they receive and attempt to care for. This results in thousands of nonhuman animals being put to death when they could have otherwise gone on to live happy and healthy lives. While the large influx of nonhuman animals and high cost of sending these animals elsewhere makes managing no kill shelters a difficult task, it is ultimately a task worth taking up so that thousands of lives are not inhumanely taken due to overcrowded shelters and insufficient resources. When human shelters become overcrowded and lack resources the people in need are not put to death for simply being in need, and the same philosophy ought to apply to nonhuman animals in the same situation who have even less of a voice and autonomy than their human counterparts.

Throughout nearly every artifact examined, there was little to no talk of livestock or farm nonhuman animals. Even when other animals, such as pigs or chickens, were mentioned, the main focus of nearly every artifact remained on dogs, followed by cats. Media source's inclusion of different species of nonhuman animals in this way speaks to the hierarchical arrangement of nonhuman animals in American society. It is no secret that American society places different levels of value on different species of nonhuman animals. The differing level of value often comes down to the function that each different species fulfills when it comes to the lives of the human members of society who hold power over them. As Hal Herzog so eloquently puts it, some we love, some we hate, and some we eat (Herzog 2010).

When it comes to the ways that nonhuman animals were covered by media sources following Hurricane Maria in Puerto Rico, it is clear that an emphasis was placed on those we love, being dogs and cats, displaying that these two species hold spots towards the top of the American nonhuman animal hierarchical arrangement. Nonhuman animals more commonly thought of as livestock or farmed nonhuman animals to be eaten, such as pigs and chickens, were given close to no consideration by the artifacts examined. When they were included, they were almost always used in a way to demonstrate the wide range of different species of nonhuman animals that were ending up at shelters, rather than examining how their entire species as a whole may have been impacted by the storm as had been done for dogs and cats.

A viable lens through which one may examine this hierarchical arrangement is that of speciesism. Echoing philosopher Peter Singer's writings in *Animal Liberation*, Hal Herzog explains the concept of speciesism as a "bias toward the interests of your species and against members of other species" (Herzog 2010: 252). This explanation can be extended beyond the bias of views toward one's own species and can also be applied to views demonstrating bias towards one species of nonhuman animals over others. Applying this extended concept to the hierarchical arrangement discussed here, one finds a clear bias favoring certain species of nonhuman animals within the artifacts, those being dogs and cats.

One possible explanation for this disparate categorization of nonhuman animals which has resulted in the limited or lack of inclusion of certain species could be the commodification of animals that currently exists within American society. While certain species of animals, such as dogs and cats, are commodified in a way that makes them much closer to human's hearts, others are commodified as food or other types of means to an end. While discussing speciesism and the use of nonhuman animals for food, Singer explains that "the idea that nonhumans are utilities, means to our ends, pervades our thought" (Singer 1973: 6). Ultimately, this system of commodification comes to root itself and play out in the ways that nonhuman animals are talked about, regardless of the topic. Here it happens to be during discussion

of nonhuman animals during a disaster event. Despite the fact that commodification related practices are not the main source of discussion, the hierarchical arrangement of nonhuman animals that have resulted from them is still highly visible in the ways that the media sources here have chosen to include and exclude certain species from their discussions.

Because devastating storms and other disaster events will not stop coming anytime soon, it is imperative that nonhuman animal planning, resources, and infrastructure are established to protect nonhuman animals in the future.

CHAPTER SIX: CONCLUSIONS

Limitations

Throughout the course of this study, several limitations were experienced. Perhaps the most influential on the study was a switch in data collection that occurred early on. Originally, the intent was to carry out the study by conducting in depth interviews with those who were present in Puerto Rico during Hurricane Maria, which were then intended to be supplemented with content analysis of artifacts that were found to contain discussion of the storm. Because of the time constraints of a Master's thesis, this original source of data was deemed to be unfeasible. It was then decided to conduct a larger analysis of content related to the storm, to be followed up with in depth interviews with those who were present on the island during the storm. This second half of the study to be carried out in the future will be discussed in greater detail shortly, however, because this switch in data source altered the course of the study, it was important to mention as a limitation as well. In the end, the switch proved to be far less limiting than expected and allowed for a great space to gain an understanding of the ways that media sources reported on, constructed, and told the story of nonhuman animals in Puerto Rico following Hurricane Maria, though the voices and experiences of nonhuman animal caregivers still require deeper investigation.

With this switch in data sources came the importance of considering that all of the media reports included within the data set were secondhand accounts, and all were reported in their own ways. While many contain excerpts from those who were present during the storm or involved in relief efforts, they were ultimately written by a reporter covering the story. Each media source constructed the reality of what they were reporting on in their own way, which does influence how the events were portrayed. This in turn also opened the door for additional analysis, as it created a space within which to understand what may have led each source to cover the event in the way that they did.

An additional limitation of the study centers around the amount of time that has passed since Hurricane Maria originally made landfall in Puerto Rico. The present study began approximately one year

after Hurricane Maria made landfall in Puerto Rico, and concluded approximately two years after landfall. While many of the artifacts included within the data set were written shortly after the storm, it is important to note that the study did not occur while many of the events being discussed were originally taking place. This is a limitation worthy of mention, though it was not significantly limiting to the study due to the method of data collection used. Had the study been carried out through in depth interviews as originally planned, this limitation would have imposed greater influence on the data collected. When studying future disaster events, attempts will be made to access the populations under investigation closer to the date that the disaster event makes its impact. If possible, plans are to arrive at areas impacted by storms and other disaster events within weeks of them happening in order to obtain firsthand accounts and conduct observations as the scenes are unfolding.

Another limitation present within the study is the absence of artifacts from Puerto Rican media sources. This limitation resulted from the method of data collection utilized within the study. Here it is important to consider that all of the media sources examined within the data set were based out of the mainland U.S. As noted, detailed information on media source locations and locations that were reported on can be found in the appendix. As the appendix indicates, a vast amount of media sources that were not national publications were based in states along the east coast of the mainland U.S., with a considerable amount being based in the Northeast. One cannot determine with certainty the influence that this limitation has imposed on the findings of the study without an examination of similar articles from Puerto Rican media sources, therefore future data expansions would do well by being sure to incorporate this missing voice within analyses.

A final limitation experienced within the study relates to intercoder reliability. This is a limitation that will be continually addressed as the study continues to expand beyond its current state and is built upon for publication. In order to increase the validity of the themes found to be emergent from the data, intercoder reliability code checks were conducted on ten percent of the data set. Code checks were

conducted with a graduate student in a Sociology PhD program at large university in the state of Florida. The code checks conducted confirmed that the emergent themes identified by the principal researcher were representative of the data, as common themes were found by both the principal researcher and the colleague recruited to assist with code checks. While conducting code checks on ten percent of the data did lend great support to the findings of the study, intentions are to continue conducting code checks until they encompass twenty percent of the data collected. Though the method of coding used was one that limits misinterpreting the data, and attempts were made to keep codes as close to the data as possible, conducting additional code checks will further increase the validity of results, and may also prompt additional codes to be picked up and examined.

Future Directions

Moving forward, several steps have been identified that ought to be taken in order to increase the body of knowledge surrounding nonhuman animals during disaster events. Some of these steps pertain to the study at hand, while others pertain to the body of knowledge as a whole. In regard to the study at hand, increasing the number of keyword searches used to construct the data set stands the potential to represent additional voices and create a more full understanding of the way that events were reported to have played out in Puerto Rico following Hurricane Maria. The same can be said of increasing the number of search results included within the data set. The present study was exploratory and not intended to be exhaustive, therefore room exists for additional artifacts to be added and analyzed to identify new emergent themes as well as support existing themes.

Building off of the exploratory nature of this study, intentions are to expand the research to include in depth semi-structured interviews with Puerto Ricans who were present on the island during the storm. Conducting semi-structured interviews will lead to deeper insight into Puerto Rican experiences with nonhuman animals during Hurricane Maria, and will also allow comparisons to be made between lived experiences and the findings generated from the content analysis conducted here. This comparison

will generate deeper insight into potential differences between individually constructed realities and those that were constructed and presented by the media sources examined. Direct interviews with those who were present during the storm will also allow the researcher to address particular topics of interest that may not have been included in the media sources that currently make up the data set. For example, it will allow questions to be asked that will help to understand how the nonhuman animal abandonment that reportedly took place impacted those who either had to abandon animal themselves or who witnessed it happening around them. Conducting in depth interviews will allow topics like animal abandonment and others mentioned in the results section here to be investigated in greater depth and compared to the lived experiences of those who were present during the disaster event.

In regard to the body of knowledge surrounding nonhuman animals during instances of disaster as a whole, perhaps the biggest step that can be taken is to simply conduct more research. This is a sentiment that was widely echoed throughout the literature that was included in the present study's review. While the literature review above does indicate that this body of knowledge exists and is growing, even more research is needed across various types of disaster events and geographic locations. All societies view and treat nonhuman animals in their own unique ways, meaning that when disaster strikes each will respond to them differently. These responses are important to understand as literature suggests that increased risk to nonhuman animals during disaster events leads to increased risk for humans during disaster events. How societies choose to plan for, care for, and respond to their nonhuman animals during instances of disaster will influence the risk that their human members experience, as well as the risk that is posed to the nonhuman animals within each society. The nonhuman animals that are impacted during disaster events are not able to aid or advocate for themselves, making it evermore important for researchers to cover a broad range of disaster events so that their voices and situations can be heard by those with the power to share them.

It is imperative that we as academics make our findings and understandings known to the general public as well as those who possess the power to create significant change such as our elected officials. Nonhuman animals have no voice or powers on their own, so it is up to us to stand for them and advocate on their behalf. We are gaining knowledge and generating insight as to the plight that many nonhuman animals suffer during instances of disaster, and much of this plight is the result of insufficient planning by humans. By sharing our findings beyond the confines of a conference or journal publication, we can help increase the planning, care, and resources needed for nonhuman animals during disaster events, among all parties involved, which will ultimately reduce their suffering and increase the safety of all who are involved, human or nonhuman. Increasing our reach and sharing what we find and learn with those around us is a starting point from which we can make great change happen.

APPENDIX: MEDIA ARTIFACT INFORMATION

Artifact Title	Artifact Source	Publication Date	Media Source Location	Location Reported On
Abandoned Animals Strain System in Puerto Rico	WLRN Miami/South Florida	Sept. 22, 2018	South Florida	Throughout Puerto Rico; no one specific location provided.
Hurricane Maria - A Personal Story	Consumers Advocate	Sept. 14, 2018	National	Throughout Puerto Rico; no one specific location provided.
Mass. Group Departs to Rescue Abandoned Animals in Puerto Rico	Boston Herald	Dec. 19, 2018	Boston, MA	Arroyo, Puerto Rico
Fall River Shelter Rescues Abandoned Animals from Puerto Rico	ABC 6 WLNE-TV	Dec. 29, 2018	Fall River, MA	Throughout Puerto Rico; no one specific location provided.
Puerto Rico Shelter Flooded with Hundreds of Abandoned Cats and Dogs After Hurricane Maria	Newsweek	Dec. 20, 2017	National	Throughout Puerto Rico; no one specific location provided.
Puerto Rico's Dogs and Cats Need Help. This Organization is Stepping Up	Nation Swell	Oct. 10, 2018	National	Piñones, Puerto Rico
In Puerto Rico, Time Measured Before and After Maria	Journal of the American Veterinarian Association News	Feb 16, 2019	National	Carolina, Puerto Rico
Pets Rescued from Hurricane Ravaged Puerto Rico Up for Adoption	ABC 8 WMTW	Oct. 19, 2018	Westbrooke, ME	Throughout Puerto Rico; no one specific location provided.
A Plane Fills with Pets Devastated by Puerto	Washington Post	Jan. 22, 2018	National	Carolina, Puerto Rico

Rico's Hurricane. Sad and Funny All at Once.				
Dogs Flown in from Puerto Rico, One Step Closer to Reuniting with Owners After Hurricane Maria	ABC 7 Eyewitness News	June 19, 2019	Chicago, IL	Pittsburgh, PA
Spayathon for Puerto Rico	Humane Society of the United States	Updated continuously; last updated 2019	National	Throughout Puerto Rico; no one specific location provided.
Forever Paws Helps Save Pets Who Lost Homes in Puerto Rico Hurricane	Herald News	Dec. 28, 2018	Fall River, MA	Arroyo, Puerto Rico
The Humane Society of the United States Launches Round Two of Spayathon for Puerto Rico	Humane Society of the United States	Nov. 1, 2018	National	Throughout Puerto Rico; no one specific location provided.
Scientists Work to Save Wild Puerto Rican Parrot After Maria	The Morning Call	Nov. 20, 2018	National	El Yunque, Puerto Rico
Hurricane Maria Devastated Puerto Rico's Forests at an Unprecedented Rate	PBS	Mar. 25, 2019	National	El Yunque, Puerto Rico
US Fish and Wildlife Provides Funding to Help Conserve the Puerto Rican Parrot	Forbes	July 29, 2018	National	El Yunque, Puerto Rico
Scientists Work to Save Puerto Rican Parrots That Were Nearly Wiped Out by Hurricane Maria	The Weather Channel	Nov. 21, 2018	National	El Yunque, Puerto Rico

In Puerto Rico, a Hopeful Sight: Endangered Parrot Spotted After Hurricane Maria	NBC News	Oct. 19, 2017	Washington, D.C.	El Yunque, Puerto Rico
Scientists Work to Save Puerto Rican Parrots after Hurricane Maria	The Washington Post	Nov. 20, 2018	National	El Yunque, Puerto Rico
Scientists Work to Save Puerto Rican Parrots	Voice of America News	Nov. 6, 2018	National	El Yunque, Puerto Rico
NASA Surveys Hurricane Damage to Puerto Rico's Forests	Science Daily	July 11, 2018	National	Throughout Puerto Rico; no one specific location provided.
How Animals and Plants Weather Hurricanes	The Scientist	Oct. 6, 2017	National	Throughout Puerto Rico and Mainland U.S.; no one specific location provided.
From Barros to the Bio Bay, What Puerto Rico's Recovery Teaches Us About Resilience	Environmental Defense Fund	Mar. 27, 2019	National	Throughout Puerto Rico; no one specific location provided.
Stronger Hurricanes Could Decimate Forests and Accelerate Climate Change, Warns Study	CNN	Mar 25, 2019	National	Luquillo, Puerto Rico
One Year Later: Dog Rescued After Hurricane Maria is Unrecognizable	PETA	Sept. 10, 2018	National	Throughout Puerto Rico and Mainland U.S.; no one specific location provided.
One Woman's Mission: Saving Dogs in Danger After Natural Disasters	CBS New York	Jan. 24, 2019	New York, U.S.	Humacao, Puerto Rico and New York, U.S.

Puerto Rican Strays Finding Homes Downeast	The Ellsworth American	Dec. 3, 2018	Cherryfield, ME	San Juan, Puerto Rico
Hurricane Maria Victims to be Reunited with Their Lost Pets	Pittsburgh Post Gazette	June 18, 2018	Pittsburgh, Pennsylvania	Throughout Puerto Rico and Mainland U.S.; no one specific location provided.
Homeless Puerto Rico Pets Saved By Team of Hero Vets	Patch	Mar. 5, 2019	North Folk, New York	Throughout Puerto Rico and Mainland U.S.; no one specific location provided.
25 Dogs Rescued From Puerto Rico Ready For Adoption	WPTV	Sept 23, 2018	West Palm Beach, FL	Throughout Puerto Rico and Mainland U.S.; no one specific location provided.
PETA's Animal Rescue Team Returns From Puerto Rico, With a Few Friends in Tow	PETA	Oct, 16, 2017	National	Throughout Puerto Rico; no one specific location provided.
Dogs Rescued From Puerto Rico After Hurricane Maria Are Being Adopted	Mashable	Oct. 23, 2017	National	Throughout Puerto Rico; no one specific location provided and New York, New York.
Local Shelter Director Returns From Puerto Rico Mission	NBC 10 News	Feb 17, 2019	Providence, RI	Throughout Puerto Rico; no one specific location provided.
Giving Dogs a Fighting Chance: Florida Lawmakers Seek Hurricane Lifeline for Pets	Tampa Bay Times	Mar. 19, 2019	Tampa, FL	Throughout Puerto Rico and Mainland U.S.; no one specific location provided.
Hurricane Maria Pummeled Puerto Rico's Dead Dog Beach and the Effort to Save Its Pups	The Washington Post	Sept. 29, 2017	National	Yabucoa, Puerto Rico and the U.S. Mainland

Volunteer Pilots are Flying Plane Loads of Dogs and Cats Out of Puerto Rico	TODAY	Oct. 2, 2017	National	Throughout Puerto Rico; no one specific location provided.
The Great Puerto Rican Doglift	The Village Voice	Mar. 22, 2018	National	Throughout Puerto Rico and Mainland U.S.; no one specific location provided.
Pets Rescued From Puerto Rico Coming to Brevard	Spectrum News 13	Sept. 4, 2018	Brevard County, FL	Throughout Puerto Rico; no one specific location provided and Brevard County, FL.
Puerto Rican Dogs Find New Homes, Hope After Hurricane Maria	WRAL	Dec. 11, 2017	Raleigh, NC	Throughout Puerto Rico; no one specific location provided and throughout North Carolina; no one specific location provided.
Potter League Takes in Puppies from Puerto Rico	Providence Journal	Dec. 25, 2018	Providence, RI	Throughout Puerto Rico; no one specific location provided and Middletown, RI.
Richmond SPCA to Receive Colony of Kittens from San Juan, Puerto Rico	WTVR	Mar. 27, 2019	Richmond, VA	San Juan, Puerto Rico and Richmond, VA.
Cornell Veterinarians Lead Animal Outreach Trips to Puerto Rico	Cornell Chronicle	Nov. 14, 2018	Ithaca, New York	Throughout Puerto Rico; no one specific location provided.
Abandoned Pets Crowd Shelters in Post-Hurricane Puerto Rico	New York Post	Dec. 20, 2017	National	Throughout Puerto Rico; no one specific location provided.
Pets From Puerto Rico Available for Adoption Locally	Hometown News	Sept. 20, 2018	Brevard County, FL	Throughout Puerto Rico; no one specific location provided and Brevard County, FL.

Dogs Rescued From Puerto Rico Up For Adoption in New York Area	ABC 7	Oct. 23, 2017	New York, U.S. and New Jersey, U.S.	Throughout Puerto Rico; no one specific location provided, New York, U.S., and Connecticut, U.S.
Adopt Us! Meet the Pets Still Available for Adoption Following Last Year's Hurricanes	People	June 15, 2018	National	Throughout Puerto Rico and Mainland U.S.; no one specific location provided.
Tailwaggers Seeks Homes for Puerto Rican Cats	Hometown Life	Nov. 21, 2017	National	Throughout Puerto Rico and Mainland U.S.; no one specific location provided.
The Rescue Networks That Save Cats and Dogs From Hurricanes	The Atlantic	Sept. 27, 2017	National	Throughout Puerto Rico and Mainland U.S.; no one specific location provided.
Puppy Rescued from Puerto Rico With Help of TV6 Now Calls the QC Home	KWQC TV 6	Dec. 26, 2018	Davenport, IA	Throughout Puerto Rico; no one specific location provided and Davenport, IA.
Arecibo Observatory Space Cats Need Your Help	Space.com	Aug. 24, 2018	National	Arecibo, Puerto Rico
88,000 Rescue PEts Now Have Forever Homes Thanks to Clear the Shelter Adoption Campaign	People	Aug. 20, 2018	National	Throughout the Mainland U.S.; no one specific location provided.
62 Dogs and Cats Rescued from Hurricane-Damaged Puerto Rico	ABC 6 News	Jan. 24, 2018	Philladelphia, PA	Throughout Puerto Rico; no one specific location provided and Washington, D.C.
Second Round of Spayathon for Puerto Rico Will Help 8,000 Dogs and Cats	The Humane Society of the United States	Nov. 8, 2018	National	Throughout Puerto Rico; no one specific location provided.

<p>“They Are Resilient Like the People”: Meet the Four-Legged Survivors of Hurricane Maria in Puerto Rico</p>	<p>NY Daily News</p>	<p>Sept. 18, 2018</p>	<p>New York, U.S.</p>	<p>San Juan, Puerto rico, Yabucoa, Puerto Rico, and New York, U.S.</p>
<p>Local Shelter Rescues More Than 100 Animals From Puerto Rico</p>	<p>WUSF Public Media</p>	<p>Nov. 2, 2017</p>	<p>Tampa, FL</p>	<p>Throughout Puerto Rico; no one specific location provided and Suncoast, FL.</p>

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