

THESIS

UNDERSTANDING HUNTER-WILD PIG (*SUS SCROFA*) INTERACTIONS IN THE  
UNITED STATES: A MIXED-METHODS RESEARCH APPROACH TO INFORM  
INVASIVE SPECIES MANAGEMENT

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Hailey E. McLean

Department of Human Dimensions of Natural Resources

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Colorado State University

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Master's Committee:

Advisor: Alan Bright

Tara Teel  
Joseph Champ  
Stephanie Shwiff

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## ABSTRACT

### UNDERSTANDING HUNTER-WILD PIG (*SUS SCROFA*) INTERACTION IN THE UNITED STATES: A MIXED-METHODS RESEARCH APPROACH TO INFORM INVASIVE SPECIES MANAGEMENT

This thesis presents two manuscripts that explore hunter-wild pig interactions to help inform decision-makers in the development of efficient and socially acceptable management plans for wild pigs in the United States. Invasive species and their establishment in new areas play an important role in the ecological, economic, and social well-being of our planet. Wild pigs (*Sus scrofa*) are one of the world's most formidable invasive species, particularly in the United States. They cause significant damage to agriculture and ecological communities, as well as transmit diseases to livestock, wildlife, and people. There is an inherent social dimension to the issue of invasive wild pigs due in part to the fact that people hunt wild pigs. Hunting contributes to both the control and the spread of this species and intensifies the risk of disease transmission.

The objectives of the first manuscript were to: 1) determine hunters' overall tolerance for wild pigs; and 2) identify what factors influence hunter tolerance. Results obtained from a survey of Texas hunters in 2019 indicated that, while hunters in Texas generally had low tolerance for wild pigs, the level of tolerance for the species was not consistent among all hunters. Hunters' tolerance ranged from wanting to see the wild pig population be completely removed or reduced, to wanting the population to remain the same size or be increased. Factors that were found to be predictors of hunters' tolerance included motivations to hunt for meat, recreation, controlling the wild pig population, and controlling wild pig damage, as well as preferences for hunting wild

pigs (i.e., a greater liking for hunting wild pigs in comparison to other game species), level of concern for wild pig damage, and attitudes toward wild pigs. In combination, these factors were highly effective in explaining the variation in hunters' tolerance for the species in the state of Texas. Information collected in this research is useful in expanding current knowledge about human tolerance for wildlife, including those species that are non-native and invasive, and in identifying important factors to consider in relation to how hunters perceive and interact with wild pigs. In addition, information collected in this research is helpful in informing the development of effective and socially acceptable management plans for wild pigs, as well as the advancement of communication efforts aimed at influencing hunters' attitudes and preferences for wild pigs and wild pig hunting.

In the second manuscript, we examined wild pig hunting videos posted on YouTube to better describe the relationship between hunters and wild pigs, including the use and frequency of best practices by hunters to mitigate disease risks associated with exposure to wild pigs during the hunting process. The specific objectives of this manuscript were to: 1) categorize information within each users' channel page for the presence of commercial intent regarding their activity on YouTube, as well as user demographics. Videos posted with commercial intent included those that were apparently prepared, done, or acted with sole or chief emphasis on salability, profit, or success of hunting/outfitting services, hunting/firearms equipment, wild pig meat, etc. 2) categorize the visual content of each video for the presence of hunting-related activities, disease risk avoidance behaviors, and subject demographics; 3) determine whether subjects in the videos were following best practices prescribed by the Centers for Disease Control and Prevention (CDC) and the United States Department of Agriculture (USDA) to mitigate the disease risks associated with hunting wild pigs; and 4) identify key themes from the textual content associated

with each video. From the sampled YouTube videos, we found users were largely posting with commercial intent and there were seven key themes emerged thematic analysis of each video's transcript and description. Key themes were, 1) promotion and marketing of brand-name companies; 2) positive sentiment toward hunting wild pigs and consuming harvested meat; 3) negative sentiment toward live wild pigs and positive sentiment toward dead wild pigs; 4) hunting motivated by a desire to control wild pigs; 5) hunting motivated by a desire to obtain meat; 6) sharing of knowledge about wild pig biology/ecology; and 7) concern about damage and direct injury from wild pigs to humans and pets. Lastly, there was a relatively small number of behaviors and communications evidencing an awareness of wild pig disease risks and best practices. Information collected in this research is useful in expanding our understanding of wild pig hunters, particularly those who use YouTube to share their hunting experiences. Findings are also helpful in identifying the extent to which hunters are implementing and communicating about best practices to aid in the development and dissemination of information related to the disease risks associated with hunting wild pigs.

Overall, the issue of wild pigs as an invasive species can be seen as a “wicked problem” in the United States. Management of wild pigs has proven to be extremely difficult because of the significant environmental and economic impacts, inadequate and conflicting knowledge, the large number of persons and opinions involved, and the connection of wild pig problems with other social and ecological issues. With this, there is a need to continue to research the human dimensions of wild pigs using mixed methodologies and interdisciplinary approaches that incorporate a range of social science disciplines. By doing so, this could help broaden our understanding of how to best manage wild pigs, deciphering discrepancies among communities, decision-makers, and scientists. Moreover, management initiatives that apply lethal measures

and outreach efforts for controlling wild pigs need to be evaluated to pinpoint the most effective means for reducing their populations on the landscape. Creating and assessing intervention policies with a more complete understanding of the human dimensions of this issue is essential in not only effectively manipulating wild pig populations, but also influencing stakeholders' attitudes, knowledge, and behaviors to curtail potential social conflicts that surround the management of this invasive species in the United States.

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## TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGEMENTS.....	vi
CHAPTER 1 – UNDERSTANDING TOLERANCE FOR AN INVASIVE SPECIES: A CASE STUDY OF HUNTER ACCEPTANCE CAPACITY OF WILD PIGS IN TEXAS ..	1
Introduction.....	1
Methods .....	9
Results.....	14
Discussion.....	17
Tables and Figures.....	22
REFERENCES .....	26
CHAPTER 2 – SOCIAL MEDIA AS A WINDOW INTO HUMAN-WILDLIFE INTERACTIONS: DISEASE RISK AVOIDANCE BEHAVIORS BY WILD PIG HUNTERS ON YOUTUBE.....	30
Introduction.....	30
Methods .....	36
Findings .....	42
Discussion.....	46
Tables.....	50
REFERENCES .....	53
APPENDIX A: SURVEY INSTRUMENT .....	57
APPENDIX B: CHARACTERIZATION CODEBOOK .....	73
APPENDIX C: THEMATIC CODEBOOK.....	79

# CHAPTER 1 – UNDERSTANDING TOLERANCE FOR AN INVASIVE SPECIES: A CASE STUDY OF HUNTER ACCEPTANCE CAPACITY OF WILD PIGS IN TEXAS

## INTRODUCTION

Invasive species and their establishment in previously uninhabited parts of the world have played a key role in global environmental change (Vitousek, D'Antonio, Loope, & Westbrooks, 1996) and have been a significant focus of conservation policy in recent years (Binimelis, Monterroso, & Rodríguez-Labajos, 2007). Invasive species are defined as non-native species whose introduction does or is likely to cause harm to human health, the economy, or the environment (NISC, 2016). The human dimensions of this situation deserve much attention (McNeely, 2001), particularly given that introductions of invasive species, whether intentional or unintentional, are often considered human-induced events (Binimelis et al., 2007). Moreover, the control and spread of invasive species are influenced by variations in human perceptions of impacts (Levine et al., 2003), the implementation of management actions (McNeely, 2001), and the very conception of invasive species as an environmental and socio-economic concern (Shrader-Frechette, 2001). Given the significant role that human thought and behavior play in influencing not only the distribution and prevalence of invasive species, but also the long-term success of their management, social science research is needed to better understand the full scope of this issue (Baruch-Mordo, Breck, Wilson, & Broderick, 2009).

Wild pigs (*Sus scrofa*) have been labeled by the International Union for Conservation of Nature (IUCN)'s Invasive Species Specialist Group as one of 100 "World's Worst" invaders (Lowe, Browne, Boudjelas, & De Poorter, 2000). Wild pigs, also called wild hogs, wild boar, feral pigs, and feral swine (Keiter, Mayer, & Beasley, 2016), are native to large parts of Europe,

Asia, and North Africa, but are non-native to the New World (Mayer & Brisbin, 2008). Wild pigs are omnivorous generalists and their diet allows them to utilize a variety of food sources and to thrive throughout a large range of habitat types, from semi-arid environments to marshes, forests, and alpine grasslands (Seward, VerCauteren, Witmer, & Engeman, 2004). They have an early maturation before the age of one, and high fecundity rates in sows result in up to two litters per year, with as many as six piglets per litter (Higginbotham, 2013). Due in part to their highly adaptable existence and significant reproductive capacity, wild pigs are among the most widely distributed large mammals in the world (Oliver & Leus, 2008).

In the 1500s, pigs were brought to the North America by early Spanish explorers as a food source (Belden & Frankenberger, 1977). Domestically, wild pigs have and continue to be intentionally or accidentally introduced by a variety of means including 1) translocation for hunting, 2) escapees from hunting preserves, 3) avoidance of capture in free-ranging domestic livestock operations, 4) abandonment by owners, and 5) dispersal from established feral populations (Gipson, Hlavachick, Berger, & Lee, 1997; Witmer, Sanders, & Taft, 2003). As of 2019, wild pigs have been reported in at least 35 U.S. states at a population estimated at over 6 million and growing (Figure 1.1) (USDA, 2019).

Wild pigs can cause considerable damage to ecological communities and agriculture, as well as transmit diseases to other wildlife, livestock, and people. For example, wild pigs root or dig for food with their snout which loosens the soil and speeds up erosion, sets back plant succession, decreases earthworm activity, and intensifies exotic plant invasions (Demarais & Krausman, 2000). They consume various amphibians, snakes, fish, crabs, turtles, eggs and chicks of ground nesting birds, rodents, and even larger wildlife and domestic livestock (Seward et al., 2004). Wild pigs also cause extensive damage to agriculture by rooting of row crops and recently

planted trees (Bevins, Pedersen, Lutman, Gidlewski, & Deliberto, 2014), as well as wallowing near water sources on farms and ranches (Campbell & Long, 2009). In the United States, wild pigs cause an estimated \$800 million dollars in agricultural damages each year and, with control costs, that estimate has reached upwards of \$1.5 billion dollars annually (Bevins et al., 2014; Pimental, 2007). Furthermore, wild pigs contribute to the transmission of a wide variety of parasites, viruses, and bacteria that are transmissible to humans, wildlife, and domestic livestock. Diseases of notable concern include brucellosis, influenza A, pseudorabies, trichinella, and hepatitis E (Bevins et al., 2014).

### **The Role of Hunters**

In the context of wild pigs in the United States, hunters play a unique role in both the control and spread of this species. Although hunting may be a technique employed to aid in population control, it may also promote interest in maintaining or establishing populations for hunting activities (Caudell, Dowell, & Welch, 2016; SEAFWA-WHWG, 2016; Zivin, Hueth, & Zilberman, 2000), including those that provide opportunities for recreation, economic gain, and procurement of food. Hunters can therefore be seen as part of the problem because they are contributing to the introduction and spread of wild pigs into new areas for hunting. However, they can also be seen as part of the solution given their importance, not only as key stakeholders in wildlife policy decisions (Organ et al., 2012), but also because they can help control populations through their hunting efforts.

Management of wild pigs has proven to be a controversial issue because government agency personnel, as well as various stakeholders, have diverse and strongly held attitudes toward wild pigs (Miller, 1993). Historically, efforts made by government agencies to control wild pig populations in many southern states have been met with backlash from hunters who

were not in favor of total eradication (Maguire, Jenkins, & Nugent, 1997; Peine & Farmer, 1990). Similarly, in Hawaii, wild pigs have been acknowledged as integral to hunting cultures, as well as a species that contributes to local heritages (Pejchar & Mooney, 2009; Weeks & Packard, 2009). Given that wild pigs' geographic distribution has nearly tripled since 1982 in the United States (Corn & Jordan, 2017), and the spread of wild pigs has been attributed to intentional introductions for hunting (Bevins et al., 2014; Caudell et al., 2016; Hutton, DeLiberto, Owen, & Morrison, 2006), states have implemented a variety of policies to control wild pigs. However, the success of such policies depends, in part, on their level of public support, which in turn may be influenced by certain groups' interest in maintaining wild pig populations (Grady, Harper, Carlisle, Ernst, & Shwiff, 2019).

Despite the evident need for understanding the human dimensions of hunter-wild pig interactions, to date there has been little research that has examined hunters' attitudes toward wild pigs and their preferences and specific motivations for hunting the species (Beasley, Ditchkoff, Mayer, Smith, & Vercauteren, 2018). In addition, there is a dearth of research on economic benefits from hunting wild pigs (e.g., guiding and outfitting services, sale of wild pigs for meat) (Beasley et al., 2018), and how those benefits may impact hunters' perceptions. Understanding the hunter stakeholder group will be crucial, given that such positive incentives may increase the desire to maintain and expand current populations of wild pigs (Caudell et al., 2016; Mapston, 2004; SEAFWA-WHWG, 2016; Zivin et al., 2000). Furthermore, understanding hunters' connection to and interaction with wild pigs can help in finding effective solutions that sustain both human livelihoods and the environment. Our study aimed to contribute to this understanding by investigating hunters' attitudes toward wild pigs and their motivations and

preferences for hunting wild pigs. We also sought to explore the economic benefits from wild pig hunting and how those benefits may influence hunter perceptions.

### **Conceptual Background**

The concept of tolerance has been applied frequently in human dimensions of wildlife investigations given its utility in understanding how stakeholder attitudes affect and are affected by wildlife management decisions (Decker & Purdy, 1988). Highlighting the significance of this concept, the following was recently identified as one of the top 100 scientific questions of importance to conservation: “what factors shape human (in)-tolerance of the presence and activities of wild animals, especially where those animals induce human-wildlife conflict” (Sutherland et al., 2009, p. 565). Tolerance can encompass both attitudinal (e.g., positive feelings toward wildlife) and behavioral (e.g., stewardship behaviors) dimensions, and is defined as an individual’s or group’s ability and willingness to accept the costs of living with wildlife and desire for positive effects that arise from interactions with wildlife (Bruskotter, Singh, Fulton, & Slagle, 2015; Carpenter, Decker, & Lipscomb, 2000; Decker & Purdy, 1988; Kansky, Kidd, & Knight, 2016; Lischka, Teel, Johnson, & Crooks, 2019; Struebig et al., 2018).

A common indicator of tolerance is wildlife acceptance capacity (WAC), defined as the maximum wildlife population level in an area that is acceptable to people (Bruskotter & Fulton, 2012; Inskip, Carter, Riley, Roberts, & MacMillan, 2016; Struebig et al., 2018). WAC can be described as a community’s “cultural carrying capacity” for a species, which is commonly measured at the individual level by asking stakeholders whether they believe that a wildlife population should increase, decrease, or remain the same size (Decker & Purdy, 1988; Riley & Decker, 2000b; Skupien, Andrews, & Larson, 2016; Slagle, Zajac, Bruskotter, Wilson, & Prange, 2013). An individual who has a lower tolerance for a species will indicate that they

prefer a smaller population, while an individual with a higher tolerance will state they prefer a larger population (Carpenter et al., 2000).

The tolerance concept has been increasingly applied in conservation literature to understand human interactions with native carnivores such as wolves, bears, and large cats, both in the United States and in other parts of the world (Bruskotter et al., 2015; Carter, Riley, & Liu, 2012; Inskip et al., 2016; Lischka et al., 2019; Majić, de Bondonia, Huber, & Bunnefeld, 2011; Riley & Decker, 2000b; Slagle et al., 2013; Struebig et al., 2018; Zajac, Bruskotter, Wilson, & Prange, 2012). The concept has also been applied in relation to other species such as the American alligator (*Alligator mississippiensis*) (Skupien et al., 2016), white-tailed deer (*Odocoileus virginianus*) (Lischka, Riley, & Rudolph, 2008), beaver (*Castor canadensis*) (Morzillo & Needham, 2015), and free-roaming cats (*Felis catus*) (Wald & Jacobson, 2013) in the United States.

Within the individual case studies that make up the majority of this research, the degree of tolerance for the species of interest has been found to vary among individuals and stakeholder groups (Inskip et al., 2016; Lischka et al., 2008; Riley & Decker, 2000b; Skupien et al., 2016; Slagle et al., 2013; Struebig et al., 2018; Wald & Jacobson, 2013). For example, in some cases, hunters were found to differ from other stakeholder groups in their desired population size for species such as white-tailed deer (Lischka et al., 2008). The need to understand hunter tolerance was discussed by Riley and Decker (2000b), who argued that disagreements could arise between wildlife managers and hunters when species management plans are developed on past assumptions and not on current hunter preferences.

Many of these case studies find relationships between people's tolerance for wildlife and other psychological concepts including attitudes toward and beliefs about the species of interest,

as well as perceptions of risks and benefits associated with the species (Bruskotter et al., 2015; Carter et al., 2012; Inskip et al., 2016; Kansky et al., 2016; Lischka et al., 2008; Lischka et al., 2019; Majić et al., 2011; Riley & Decker, 2000b; Skupien et al., 2016; Struebig et al., 2018; Wald & Jacobson, 2013; Zajac et al., 2012). An attitude is defined as a favorable or unfavorable disposition toward an issue, object, person, etc. that arises from one's beliefs. The latter, according to attitude theory, are cognitions that reflect what people think to be true but are not necessarily based on fact (Fishbein & Ajzen, 2010). For example, if the object is wild pigs, a belief may be, "wild pigs eat row crops" or "wild pigs are a nuisance", which could form the basis for a negative attitude toward the species. Perceived risks represent the extent to which a person identifies a risk from a specific source (Siegrist & Cvetkovich 2000; Sjöberg 2000; Miller & Shelby 2009; Needham, Vaske, & Petit, 2017). Perceptions of risks may also elicit feelings of concern (e.g., worry and anxiety) (Burger, Sanchez, Gibbons, & Gochfeld, 1998; Gore, Knuth, Curtis, & Shanahan, 2006). Wild pigs can be a risk to agriculture and the environment given the damages they cause, but they can also be a risk to wildlife, livestock, and humans via disease transmission. Perceived benefits reflect the extent to which someone identifies the value gained, which could be tangible or intangible, from a specific source (Kansky et al., 2016). Wild pigs can provide intangible benefits such as the existence value of having them on the landscape. Likewise, there are also tangible benefits such as economic gain that arise from wild pigs, such as opportunities for selling guide and outfitting services to hunters or selling captured wild pigs to a butcher.

In addition, some research has found that past experiences with wildlife can be an important factor to consider when assessing tolerance (Carpenter et al., 2000; Carter et al., 2012; Decker & Purdy, 1988; Kansky et al., 2016; Riley & Decker, 2000a). Experience can encompass



both positive and negative interactions with a species of interest. For example, hunting wild pigs may be a positive experience to some (Bruskotter et al., 2015), while encounters with wild pig damage may be a negative experience. People who live in the same areas as wild pigs, including landowners and personnel involved in their management, will arguably have more direct experiences with wild pigs that could influence their perceptions. For example, it has been documented that people have a lower tolerance for carnivores when these animals move into areas of human habitation or come close to people's homes (Kleiven, Bjerke, & Kaltenborn, 2004; Riley & Decker, 2000b; Zimmermann, Walpole, & Leader-Williams, 2005). While their influence is typically weak compared to psychological factors, socio-demographic characteristics (e.g., age, gender) are also often explored in studies of tolerance (Kansky & Knight, 2014; Lischka et al., 2019). In the context of wild pigs, individuals with a high level of education, for example, may have more knowledge of wild pigs and their risks and may therefore be less tolerant of the species than those with less education. While these previous studies have provided valuable insight across a host of species, research is lacking on human tolerance for wild pigs, including hunter tolerance specifically.

### **Study Purpose and Objectives**

In response to this lack of research, our study's research objectives were to: 1) determine hunters' overall tolerance for wild pigs; and 2) identify what factors influence hunter tolerance. These factors included those that had significant influence on tolerance and/or were commonly investigated in previous studies, including prior experience, perceptions of risks and benefits, attitudes toward the species, and socio-demographic characteristics (Figure 1.2). Additional factors not yet investigated in previous studies but deemed relevant in the wild pig context were also examined, including motivations and preferences for hunting wild pigs. Inclusion of these

contextual factors represents a unique contribution to both the tolerance and the wild pig literature (Figure 1.2). Lastly, land ownership or management was also investigated considering that those who own or manage land in Texas may have more direct interactions with wild pigs that are on the landscape (Figure 1.2). Information collected in this research was intended to be useful in expanding current knowledge about human tolerance for wildlife, including those species that are non-native and invasive, and in identifying important factors to consider in relation to how hunters perceive and interact with wild pigs. In addition, information collected in this research was intended to help in the formation of effective and socially acceptable management plans for wild pigs, as well as the development of communication and outreach efforts aimed at influencing hunters' attitudes and preferences for wild pigs and wild pig hunting in the state of Texas.

## METHODS

### **Sampling and Data Collection**

This project was funded by the Texas State Legislature and co-produced by the USDA's National Feral Swine Damage Management Program and Texas A&M's AgriLife Extension Service. Data were collected using an online survey administered via Qualtrics (Provo, Utah) (IRB reference number: 083112) (See Appendix A). Data for this study came from a population of individuals who purchased any type of Texas hunting license for the 2018-2019 hunting year ( $n = 169,619$ ). Email addresses of license holders were provided by Texas Parks and Wildlife. This population was identified based on agency interests to better understand hunters' attitudes, behaviors, and management preferences for wild pigs in the state of Texas. Individuals in this sample included both Texas residents and out-of-state residents who traveled to Texas to hunt. The survey was sent to each individual via email on June 4<sup>th</sup>, 2019. Two reminder emails were sent to participants on June 7<sup>th</sup> and 10<sup>th</sup>, 2019 and the survey closed on July 9<sup>th</sup>, 2019.

## Measurement of Key Concepts

*Tolerance for wild pigs.* Tolerance was measured using one item intended to elicit respondents' preferences for future changes to the wild pig population size in the state of Texas (Decker & Purdy, 1988; Riley & Decker, 2000b; Skupien et al., 2016; Slagle et al., 2013). Respondents identified their preferences for change in the wild pig numbers by indicating whether they wanted the population to be completely removed, reduced, remain the same, or increased.

*Prior experience with wild pigs.* Two types of experiences with wild pigs were measured using two distinct items. First, experience with hunting wild pigs was measured by asking respondents, "Which types of animals do you hunt in Texas?" (variable was recoded to yes/no to indicate if 'wild pigs' was selected from the categories provided). Second, experience with wild pig damage was measured by asking those respondents who stated that they owned or managed land in Texas, "Please mark all of the areas in which wild pigs had negative impacts on your property in the past year" (variable was recoded to yes/no to indicate if they had experienced negative impacts in at least one area on their property).

*Perceptions of risks and benefits.* Perceptions of risks were measured with a set of 12 items intended to examine respondents' level of concern for wild pig damage. Concern can be conceptualized as an emotional construct that includes feelings of worry and anxiety, which are often elicited by risk perceptions (Burger et al., 1998; Gore et al., 2006). The 12 items consisted of different types of damage caused by wild pigs, including damage to crops, land, equipment, and people. For each type of damage, respondents rated their level of concern on a scale from 1 = "no concern" to 5 = "very high level of concern". Perceptions of benefits were measured with two items associated with wild pig hunting-related activities. The first item asked respondents,

“Have you ever trapped and sold live wild pigs?” (yes/no) and the second, “Did you provide any wild pig guide or outfitting services to paying hunters in 2018?” (yes/no).

*Attitudes toward wild pigs.* Attitudes toward wild pigs were measured with a set of seven belief statements, on a scale from 1 = “strongly disagree” to 5 = “strongly agree”. These included four positive statements: “Wild pigs increase my overall quality of life”, “Wild pigs are a valuable resource for recreation, meat, or income in Texas”, “Overall, my feelings about wild pigs in Texas are generally positive”, and “Wild pigs have the right to exist wherever they may occur”. The item set also contained three negative statements: “The harm caused by wild pigs outweighs any benefits of having them in Texas”, “Wild pigs do not belong in Texas”, and “Wild pigs are a nuisance”.

*Socio-demographic characteristics.* Socio-demographic characteristics included Texas residency (item recoded to yes/no based on ZIP code of primary residence), age (recoded based on birth year), gender (male/female), highest level of education (did not graduate high school or receive GED; high school graduate, diploma, or GED; some college, no degree; Associate degree; trade/technical/vocational training; Bachelor’s degree; Master’s degree; Doctoral degree), race/ethnicity (White, Black or African American, American Indian or Alaska Native, Spanish, Hispanic or Latino, Asian, Native Hawaiian or Pacific Islander, or Other) (recoded as yes/no for each category), and average household income (less than \$20,000, \$20,000 to \$34,999, \$35,000 to \$49,999, \$50,000 to \$74,999, \$75,000 to \$99,999, and over \$100,000).

*Motivations for hunting wild pigs.* Motivations for hunting were independently measured with a set of five items. Respondents who stated that they had hunted wild pigs in Texas were asked how important (1 = “not at all important” to 5 = “very important”) each motivation was,

including meat, trophies (skull, etc.), recreation, controlling wild pig populations, and controlling wild pig damage.

*Preferences for hunting wild pigs.* Preferences for hunting wild pigs were measured with a set of four belief statements. These included, “I prefer hunting wild pigs even when other animals are available for me to hunt,” “I started hunting wild pigs before I became interested in hunting other animals,” “I devote more time to hunting wild pigs than other animals,” and “I only purchase my hunting license to hunt wild pigs”. Preferences were measured on a 5-point scale from 1 = “strongly disagree” to 5 = “strongly agree”.

*Land ownership or management.* Land ownership or management was measured with the following item: “Do you own or manage land in Texas?” (yes/no).

## **Data Analysis**

Data were entered and analyzed using SPSS Statistics (Chicago, Illinois). Descriptive statistics from the single, WAC question were examined to determine hunters’ overall tolerance for wild pigs. We conducted reliability analysis to examine the internal consistency of the level of concern scale, the attitudes toward wild pig scale, and the preferences for hunting wild pig scale to assess internal scoring consistency among each set of items. For scales yielding a Cronbach's alpha greater than 0.65, indicating acceptable measurement reliability (Vaske 2008), we computed composite scores by averaging responses for items comprising each scale.

Next, to build a parsimonious model to predict tolerance, we conducted bivariate correlations to investigate the relationships between various continuous and dichotomous, independent variables that were theoretically known to influence tolerance, as well as conceptually relevant to investigate in the given context. Variables tested included prior experience with hunting wild pigs and damage, level of concern for damage, perceptions of

benefits associated with wild pig hunting related activities, attitudes toward wild pigs, socio-demographic characteristics, as well as motivations and preferences for hunting wild pigs, and land ownership or management. Pearson's correlation coefficient ( $r$ ) served as the indicator for statistical association between the dependent variable and the continuous-level independent variables, while the Point-biserial correlation ( $r_{pb}$ ) coefficient served as the indicator of statistical association between the dependent variable and the dichotomous-level independent variables. In terms of effect size, a  $r = 0.10$  or  $r_{pb} = 0.10$  (positive or negative) represented 'minimal' relationships,  $r = 0.30$  or  $r_{pb} = 0.24$  represented 'typical' relationships, and  $r \geq 0.50$  or  $r_{pb} \geq 0.37$  were considered 'substantial' relationships (Vaske, 2008).

Once the initial correlation analysis was conducted, independent variables that provided a typical or substantial relationship with tolerance ( $r$  or  $r_{pb} > .25$  (positive or negative)) were selected to be included in a final regression analysis. A multiple linear regression analysis was then conducted to build a model of explanatory variables that best explained the variance in hunter tolerance for wild pigs. The sample multiple correlation coefficient ( $R^2$ ) was used to report the amount of variability in the dependent variable that has been accounted for or explained by the independent variables (Vaske, 2008). Prior to modeling, we assessed multicollinearity by examining bivariate correlations (Pearson's  $r$ ) between the independent predictor variables. Where  $r > .50$ , we inspected Variance Inflation Factor (VIF) values. If VIF values were  $> 5$ , the variable with the weaker correlation with tolerance was removed (Zar, 1999).

## RESULTS

### **Descriptive Statistics of Key Concepts**

Of the 169,619 questionnaires administered; 10,199 were undeliverable and 37,317 were returned, yielding an overall response rate of 23%. Approximately 89% of respondents were Texas residents, 57% were between the ages of 43 and 67, 91% were white, and 96% were male. Sixty-five percent of respondents had an average household income over \$100,000, and 38% had a bachelor's degree. According to the 2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation our sample is largely representative of hunters in the United States (USDOI, USFWS, USDOC, & USCB, 2016). For tolerance, 20.3% of respondents would like to see the wild pig population numbers in the state of Texas be completely removed, 63.1% would like to see numbers be reduced, 14.4% would like to see numbers remain the same size, and 2.2% would like to see numbers increased.

Seventy-three percent of respondents stated they had hunted wild pigs, and 32% of respondents stated they had experienced negative impacts on their property in the past year. Respondents' average level of concern for risks associated with wild pigs were as follows: crop losses ( $m = 3.94$  out of 5.00), stored commodity losses ( $m = 3.37$ ), damage to pastures ( $m = 4.12$ ), damage to wetlands ( $m = 3.91$ ), habitat degradation ( $m = 4.09$ ), damage to water quality ( $m = 3.92$ ), damage to personal property ( $m = 3.98$ ), loss of land value ( $m = 3.59$ ), loss of lease value ( $m = 3.27$ ), livestock injury or disease ( $m = 3.65$ ), wildlife competition or predation ( $m = 4.09$ ), and human disease or injury ( $m = 3.43$ ). Reliability analysis (Cronbach's  $\alpha = 0.94$ ) supported the creation of a composite scale using these items ( $m = 3.79$ ) (Vaske, 2008). Eleven percent of respondents had trapped and sold live wild pigs, and 1% of respondents stated they had provided wild pig guide or outfitting services to paying hunters in 2018.

Moreover, respondents' average level of agreement with belief statements that indicated their attitudes toward wild pigs were as follows: "Wild pigs increase my overall quality of life" (m = 2.27 out of 5.00), "Wild pigs are a valuable resource for recreation, meat, or income in Texas" (m = 3.19), "Overall, my feelings about wild pigs in Texas are generally positive" (m = 2.59), "Wild pigs have the right to exist wherever they may occur" (m = 2.12), "The harm caused by wild pigs outweighs any benefits of having them in Texas" (m = 3.60), "Wild pigs do not belong in Texas" (3.07), and "Wild pigs are a nuisance" (m = 4.12). After reverse coding the negative statements, the internal consistency of the belief statements for the attitude scale was examined using reliability analysis. Reliability analysis (Cronbach's alpha = 0.86) supported the creation of a composite scale using these items (m = 2.48).

On average, the most important motivations specified by respondents for hunting wild pigs were to obtain a trophy animal (m = 4.22 out of 5.00), followed by procurement of meat (m = 2.86), recreational purposes (m = 2.50), control of damage (m = 1.56), and control of the population (m = 1.54). Respondents' average level of agreement with belief statement that indicated their preferences for hunting wild pigs were as follows: "I prefer hunting wild pigs even when other animals are available for me to hunt" (m = 2.59 out of 5.00), "I started hunting wild pigs before I became interested in hunting other animals" (m = 1.58), "I devote more time to hunting wild pigs than other animals" (m = 2.15), and "I only purchase my hunting license to hunt wild pigs" (m = 1.35). Reliability analysis (Cronbach's alpha = 0.68) supported the creation of a composite scale using these items (m = 1.92). Lastly, Forty-eight percent of respondents owned or managed land in Texas.



## Identification of Factors Influencing Hunter Tolerance

Results from the bivariate correlation analyses that examined the relationships between the selected independent variables and tolerance showed that seven continuous variables had an relationship with tolerance that was between minimal and substantial (Table 1.1). These variables included responses for motivation to hunt for meat, recreation, controlling the wild pig population, and controlling wild pig damage, as well as mean composites for preferences for hunting wild pigs, level of concern for damage, and attitudes toward wild pigs. Variables that did not have an association with tolerance that was between minimal and substantial, and therefore were removed from the model included, prior experience, perceptions of benefits, socio-demographic characteristics, and ownership or land management.

An additional assessment of multicollinearity, or intercorrelation between independent variables, showed that there was one relationship where  $r > 0.50$ . That relationship was between motivation to hunt to control damage and motivation to hunt to control the population ( $r = 0.85$ ). However, the VIF scores were 3.73 and 3.56, respectively indicating that multicollinearity was not a significant concern, and therefore both items were kept for the regression analysis.

Results from the multiple linear regression analysis provided an  $R^2$  value equal to 0.527, indicating that approximately 53% of the variance in tolerance for wild pigs could be accounted for by the linear combination of the independent variables (Table 1.2). In this model, all independent variables had 95% CIs that excluded zero, indicating all values within each confidence interval were plausible values for the given parameter. Motivations to hunt for meat had a negative relationship with tolerance, indicating that people who thought it was important to hunt wild pigs to obtain meat were less tolerant. Similarly, motivations to hunt wild pigs for recreational purposes had a negative relationship with tolerance, indicating that people who

thought it was important to hunt wild pigs for recreational purposes were less tolerant. Conversely, motivations to hunt wild pigs to control the wild pig population and damage had a positive relationship with tolerance, indicating that people who thought it was important to hunt wild pigs to control population sizes and resulting damages were more tolerant of wild pigs. Preferences for hunting wild pigs and attitudes toward wild pigs also had a positive relationship with tolerance, indicating that people who preferred to hunt wild pigs and those who held more positive attitudes toward wild pigs were more tolerant. Lastly, level of concern for wild pig damage had a negative relationship with tolerance, indicating that people who had higher levels of concern were less tolerant. Of these seven factors, the magnitude of effect was largest for attitudes toward wild pigs, followed by level of concern for damage.

## DISCUSSION

In keeping with previous studies that have found varying degrees of tolerance for wildlife (Inskip et al., 2016; Lischka et al., 2008; Riley & Decker, 2000b; Skupien et al., 2016; Slagle et al., 2013; Struebig et al., 2018; Wald & Jacobson, 2013), our study documented that while many hunters in Texas generally had low tolerance for wild pigs, the level of tolerance for the species was not consistent among all hunters. Over 80% of respondents indicated that they would like to see the wild pig population be reduced or completely removed. However, some respondents were more tolerant, with 16% stating they would like to see the population stay the same size or increase. Considering tolerance for wildlife has been used to evaluate public support for different management methods (Decker & Purdy, 1988; Inskip, Fahad, Tully, Roberts, & MacMillan, 2014), understanding that there is some variation in the degree of hunter tolerance for wild pigs is important because not all hunters may be in favor of certain management decisions. To help avoid or reduce conflict over management initiatives it may therefore be advantageous for

managers to consider the differences in hunter tolerance for wild pigs while developing future management plans for this species (Zinn, Manfredo, & Vaske, 2000). This would entail ensuring hunters' cultural carrying capacity and the environment's biological carrying capacity for wild pigs coincide to represent an "optimum carrying capacity" for wild pigs on the landscape.

Our results are also consistent with previous research indicating psychological factors including beliefs, attitudes, and perceptions of risks are important predictors of tolerance (Bruskotter et al., 2015; Carter et al., 2012; Inskip et al., 2016; Kansky et al., 2016; Lischka et al., 2008; Lischka et al., 2019; Majić et al., 2011; Riley & Decker, 2000b; Skupien et al., 2016; Struebig et al., 2018; Wald & Jacobson, 2013; Zajac et al., 2012). Most notably, hunters' attitudes toward wild pigs had the greatest influence on tolerance and the largest magnitude of effect within the regression model, followed by level of concern for wild pig damage. Based on attitude theory, and with the knowledge that there are strongly held attitudes toward wild pigs surrounding their management in the United States (Miller, 1993), it is logical that attitudes played a key role in influencing hunters' tolerance for the species.

While an improved understanding of the factors that explain for differences in tolerance can help managers resolve or circumvent conflicts more successfully, it can also help them communicate more effectively (Zinn et al., 2000). Given that level of concern for wild pig damage was a key predictor of hunters' tolerance, communication designed to modify hunters' risk perceptions may be more effective in reducing impacts from wild pig hunting (e.g., spread and growth of wild pig populations) than attempts to manipulate their populations alone. According to the best practices for framing messages from psychological science that can help government agencies improve policymaking regarding natural resource issues (Van der Linden, Maibach, & Leiserowitz, 2015), outreach material that 1) emphasizes the current negative

impacts from wild pigs while making impacts or solutions locally relevant; 2) frames solutions to wild pig issues in terms of what can be gained; 3) frames messages to appeal to the values of hunters; and 4) pairs fear appeals with efficacy appeals is likely be most effective in influencing hunters' risk perceptions. An example of this might be, "Wild pigs are an invasive species in the United States and today, they are growing and dispersing easily while harming native species and ecosystems. Without them, native wildlife and plant species can flourish on your land."

Other psychological factors that were found to be predictors of hunter tolerance included preferences and motivations for hunting wild pigs. Understanding peoples' motivations and preferences for hunting wildlife provides a unique contribution with consideration that prior research on tolerance has not yet examined these factors. Surprisingly, we found that respondents who were motivated to hunt wild pigs for procurement of meat or for recreational purposes were less tolerant, and respondents who were motivated to hunt to control the population and damage were more tolerant. We might hypothesize that those who find it important to hunt wild pigs to control population sizes and damage may feel they have more personal control over the risks that wild pigs pose and/or have higher trust in managers, allowing them to be more tolerant of pigs on the landscape. Previous literature has shown that an increase in individuals perceived level of personal control over risks and social trust in management agencies can indirectly raise stakeholders' tolerance (Bruskotter & Wilson, 2014; Zajac et al., 2012).

In contrast to the many assumptions that underlie management of negative interactions with wildlife, our study, like others, revealed that prior experience with wild pig damage was not a strong predictor of hunters' tolerance for the species (Inskip et al., 2016; Lischka et al., 2019; Majić et al., 2011; Riley & Decker, 2000b). Similarly, experience with wild pig hunting, whether perceived as a positive or negative experience, did not affect hunter tolerance. Ownership or

management of land, which may provide more opportunities for human-wild pig interaction and conflict was also found to not be strong predictor of tolerance. This differs from some findings of previous research that revealed peoples' tolerance for wildlife can be negatively affected by the species proximity to human dwellings and territories (Kleiven et al., 2004; Riley and Decker, 2000b; Zimmermann et al., 2005).

Moreover, in contrast to recent studies that found benefits associated with wildlife played important, and often key roles in determining a person's tolerance (Bruskotter & Wilson, 2014; Lischka et al., 2019; Zajac et al., 2012), our study found that benefits attributed to wild pig hunting related activities were not predictors of hunters' tolerance. This could have been the case simply because very few respondents stated that they trapped and sold live wild pigs or provided guide and outfitting services to paying hunters, or more likely, because measurement of this factor was somewhat limiting in comparison to how previous research has operationalized it. However, we might also hypothesize that hunters believe that the risks wild pigs pose outweigh any economic benefits from hunting them. Economic benefits associated with hunting might also be less important to hunters than other tangible, non-economic benefits such as obtaining a trophy animal, procuring meat, or gaining more recreational hunting opportunities.

Future research could benefit from expanding on this topic and by addressing certain limitations found in this study. While our model explained approximately 53% of the variation in tolerance, our understanding may be improved by investigating other key factors found to be predictors of tolerance. These factors include perceptions of tangible, non-economic benefits, as well as intangible benefits associated with wild pigs. Additionally, wildlife value orientations, trust in management agencies, and perceived level of personal control over risks related to wild pigs should be evaluated. There is also a need to assess hunter tolerance in relation to the

standard operationalization of perceived risks that is common in previous literature, realizing that level of concern in our study was just one potential indicator of this topic (i.e., emotional indicator rather than a measurement of likelihood of risk). We also recommend further exploring the relationship between WAC, used in our study and behavioral measures of tolerance, such as an individual's willingness to allow wild pigs to persist on the landscape (e.g., trapping and relocating wild pigs) to provide additional, useful information beyond general attitudinal measures. Lastly, there is a need to investigate hunter tolerance for wild pigs within other states in the U.S., as well as among other stakeholder groups to assess competing interests (Organ & Ellingwood, 2000).

Overall, this study provides unique contributions to the tolerance literature by expanding on our understanding of tolerance for wildlife beyond its typical conservation context to include tolerance of a non-native and invasive species. Moreover, this study expands upon the available knowledge of human tolerance to include novel insight into hunter preferences for wild pigs. While this study sought to not only make unique contributions to the tolerance literature and the wild pig literature more broadly, it also provided practical evidence for informing invasive species management. This included evidence for the formation of future management plans for wild pigs that ensure initiatives are in alignment with stakeholders' preferences to reduce or resolve potential conflict. In addition, evidence provided by this study is useful in informing communication and outreach efforts aimed at influencing hunters' attitudes and preferences for wild pigs and wild pig hunting in the state of Texas.

## TABLES AND FIGURES

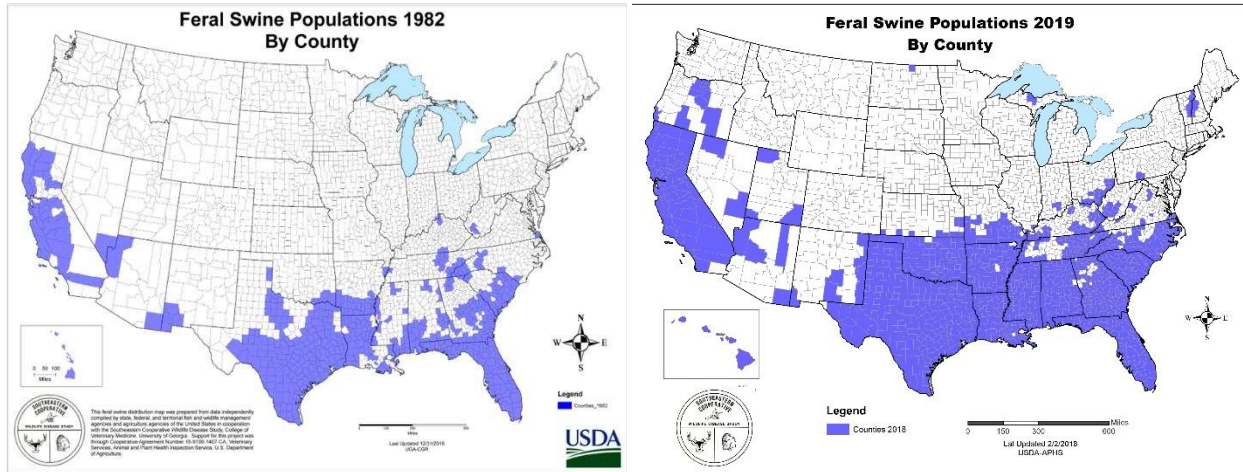


Figure 1.1. Growth in wild pig density at the county level across the United States from 1982 (left) to 2019 (right).

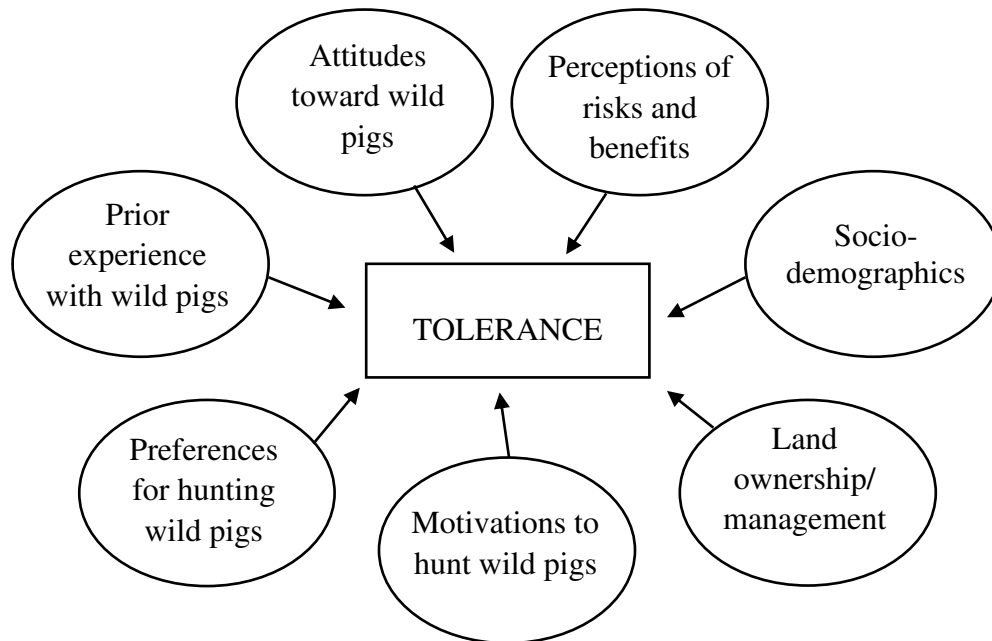


Figure 1.2. Factors investigated in identifying their influence on hunters' tolerance for wild pigs.

Table 1.1. Correlation of tolerance and all independent variables.

	Tolerance <sup>1</sup>
	Pearson's <i>r</i> or <i>r<sub>pb</sub></i>
Prior experience: hunt wild pigs <sup>2</sup>	.152*
Prior experience: wild pig damage <sup>2</sup>	-.174*
Motivation to hunt for meat <sup>3</sup>	-.319*
Motivation to hunt for recreational purposes <sup>3</sup>	-.255*
Motivation to hunt to obtain a trophy animal <sup>3</sup>	-.195*
Motivation to hunt to control population <sup>3</sup>	.392*
Motivation to hunt to control damage <sup>3</sup>	.396*
Preferences for hunting wild pigs <sup>4</sup>	.253*
Economic benefits: Trapped and sold live wild pigs <sup>2</sup>	-.011*
Economic benefits: Provided wild pig guide and outfitting services <sup>2</sup>	.047*
Land ownership or management <sup>2</sup>	-.129*
Level of concern for wild pig damage <sup>5</sup>	-.386*
Attitudes toward wild pigs <sup>4</sup>	.702*
Texas residency <sup>2</sup>	-.052*
Age <sup>2</sup>	-.130*
Gender <sup>2</sup>	.048*
Level of education <sup>2</sup>	-.044*
Average household income <sup>2</sup>	-.014**
Ethnicity: White <sup>2</sup>	-.007*
Ethnicity: Black or African American <sup>2</sup>	-.006*
Ethnicity: American Indian or Alaska Native <sup>2</sup>	-.006*
Ethnicity: Spanish, Hispanic, or Latino <sup>2</sup>	-.006*
Ethnicity: Asian <sup>2</sup>	-.006*



Ethnicity: Native Hawaiian or Pacific Islander <sup>2</sup>	-.006*
Ethnicity: Other <sup>2</sup>	-.006*

<sup>1</sup> Tolerance coded as (1) Completely removed, (2) Reduced, (3) Remain the same, (4) Increase

<sup>2</sup> Variables coded as (1) yes, (0) no

<sup>3</sup> Variables coded as (1) Not at all important, (2) Not very important, (3) A little important, (4) Fairly important, (5) Very important

<sup>4</sup> Variables coded as (1) Strongly disagree, (2) Disagree, (3) Somewhat disagree, (4) Unsure, (5) Somewhat agree, (6) Agree, and (7) Strongly agree

<sup>5</sup> Variables coded as (1) No concern, (2) Low level of concern, (3) Moderate level of concern, (4) High level of concern, (5) Very high level of concern

\* Significant at  $p$ -value < .001

\*\* Significant at  $p$ -value < .05

Table 1.2. Multiple linear regression of factors affecting hunters' tolerance for wild pigs in Texas, USA. The  $R^2$  value of this model was .527.

Variable	Unstandardized $\beta$	Standardized values			
		$\beta$	SE	95% CIs	
				Lower	Upper
Intercept	1.143		.029	1.085	1.200
Motivation to hunt for meat	-.007	-.014*	.003	-.011	-.002
Motivation to hunt for recreational purposes	-.029	-.057*	.003	-.034	-.024
Motivation to hunt to control population	.069	.097*	.007	.056	.082
Motivation to hunt to control damage	.015	.022	.007	.003	.028
Preferences for hunting wild pigs	.045	.056*	.004	.037	.054

Level of concern for wild pig damage	-.074	-.100*	.004	-.083	-.066
Attitudes toward wild pigs	.414	.576*	.005	.405	.423

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\* Significant at  $p$ -value < .05

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CHAPTER 2 – SOCIAL MEDIA AS A WINDOW INTO HUMAN-WILDLIFE  
INTERACTIONS: DISEASE RISK AVOIDANCE BEHAVIORS BY WILD PIG HUNTERS  
ON YOUTUBE

INTRODUCTION

Problems associated with invasive species – i.e., non-native species that threaten the economy, the environment, or human and animal health (NISC, 2016) – are among the most serious global ecological challenges faced today (Beaury et al., 2020). Often, humans are the driving forces of invasive species introductions (Perrings, 2001), and enhanced connectivity of the human population around the globe has intensified the occurrence and impact of invasive species and disease outbreaks (Crowl, Crist, Parmenter, Belovsky, & Lugo, 2008). The severity and extent of these problems are also influenced by the public’s awareness of invasive species impacts (Levine et al., 2003), their understanding of invasive species as an environmental and social issue (Shrader-Frechette, 2001), as well as and by the application of effective management strategies (McNeely, 2001). Given the important role people’s beliefs and actions play in affecting the dispersal and abundance of invasive species, human dimensions research is vital for understanding not only the drivers of invasive species introductions, but also for identifying appropriate management interventions (Baruch-Mordo, Breck, Wilson, & Broderick, 2009).

Among the most destructive of invasive species are wild pigs (*Sus scrofa*), also referred to as wild hogs and feral swine among other common names (Keiter, Mayer, & Beasley, 2016). The International Union for Conservation of Nature (IUCN)’s Invasive Species Specialist Group includes wild pigs on its list of the 100 “World’s Worst” invasive species (Lowe, Browne, Boudjelas, & De Poorter, 2000) and it has been suggested that wild pigs are the prominent non-

native species causing damage to protected areas in the United States (Vitousek, D'Antonio, Loope, & Westbrooks, 1996). Wild pigs also can cause significant damage to larger ecological communities and agriculture. They loosen the soil by rooting or using their snout to dig for food, as well as wallowing near water sources on farms and ranches, which have implications for production of row crops, soil composition, water quality, and forest regeneration (Campbell & Long, 2009). Wild pigs also consume and compete with a wide variety of native wildlife and domestic livestock (Seward, VerCauteren, Witmer, & Engeman, 2004). In the United States, estimated costs of wild pig damage, including control costs, range from \$800 million (Elsley, Mouton, & Kinler, 2012) to \$1.5 billion annually (Pimental, 2007).

To date, most published studies have focused on damages caused by wild pigs (Anderson, Sloodmaker, Harper, Holderieath, & Shwiff, 2016; Campbell & Long, 2009; Elsley et al., 2012; Engeman, Terry, Stephens, & Gruver, 2018; McKee, Anderson, Carlisle, & Shwiff, 2020; Pimental, 2007), and relatively fewer published studies have considered the disease risks associated with wild pigs. Even so, there are significant concerns surrounding wild pigs and infectious diseases. With consideration of their increasing dispersal, along with their social behaviors and opportunistic diet, wild pigs are key vectors for disease (Brown, Bowen, & Bosco-Lauth, 2018). In the United States, records show that wild pigs carry and contribute to the transmission of various viruses, bacteria, and parasites that can infect humans, pets, domestic livestock, and other wildlife (Bevins, Pedersen, Lutman, Gidlewski, & Deliberto, 2014). Important infectious diseases that can be transmitted to humans include hepatitis E, tuberculosis, leptospirosis, trichinellosis, and brucellosis (Meng, Lindsay, & Sriranganathan, 2009). Other diseases of notable concern include influenza A and pseudorabies (Bevins et al., 2014). While the spread of pathogens is not a broadly considered effect that wild pigs have as an invasive



species, it is evident that they are playing a significant role in the health of our planet (Bevins et al., 2014).

### **Disease Risk and Hunters**

A key stakeholder group in the issues that surround wild pigs in the United States is hunters. They play a unique role in both the control and spread of wild pigs and the diseases that wild pigs carry. While hunting may assist with population control, it may also stimulate interest in conserving or establishing populations for future hunting opportunities (Caudell, Dowell, & Welch, 2016; Mapston, 2004; SEAFWA-WHWG, 2016; Zivin, Hueth, & Zilberman, 2000). Attributed to the popularity of hunting, wild pigs and the pathogens they carry have been making their way into new areas due to intentional introductions from hunters (Bevins et al., 2014; Caudell et al., 2016; Hutton, DeLiberto, Owen, & Morrison, 2006). With the growing popularity of wild pig hunting and consumption of wild pig meat, there is an increased risk of human exposure to infectious diseases (Meng et al., 2009).

When humans come into contact with bodily fluids of infected pigs or consume wild pig meat, they run the risk of contracting more than 24 different types of pathogens (CDC/USDA, 2016; Meng et al., 2009). For example, dressing harvested animals creates an opportunity for exposure that can result in illness and, in some cases, death in humans (Brown et al., 2018; Ruiz-Fons, 2017). Globally, there have been several case reports that document transmission events from wild pigs to humans (Brown et al., 2018; Meng et al., 2009). Numerous, severe cases of hepatitis E have been linked, for example, to the consumption of undercooked meat from wild pigs in Japan (Li et al., 2005; Matsuda, Okada, Takahashi, & Mishiro, 2003; Yazaki et al., 2003). In the United States, multiple case reports have documented *Brucella suis* infections in humans following interactions with wild pigs (Brown et al., 2018). Signs of illness were reported in

individuals following events of hunting and dressing wild pigs in South Carolina (Starnes, Talwani, Horvath, Duffus, & Bryan, 2004), Florida (Carrington et al., 2012), and Georgia (Franco-Paredes, Chastain, Taylor, Stocking, & Sellers, 2017).

Given their recurrent and extended interactions with wild pigs, hunters are likely to be at greater risk of pathogen exposure (Brown et al., 2018). Health professionals therefore recommend that hunters exercise best practices to reduce the risk of disease transmission, including avoiding contact with visibly ill animals or those found dead; using clean, sharp knives when field dressing and butchering; and wearing gloves, eye protection, and other personal protective equipment when handling dead or alive animals (Brown et al., 2018; CDC/USDA, 2016). It is also recommended that hunters avoid making skin contact with wild pig fluids or organs and burn or bury gloves and leftover carcasses (CDC/USDA, 2016). Hands should be washed as soon as possible after contact with warm water for at least 20 seconds, and all tools and reusable gloves should be cleaned with a disinfectant (CDC/USDA, 2016). Pets should also be kept away from wild pig carcasses and should not consume raw meat (CDC/USDA, 2016). In addition, meat saved for consumption should be kept cold as well as separate from other food to prevent cross-contamination, and those cooking the meat should ensure it has an internal temperature of at least 160 degrees Fahrenheit (Brown et al., 2018; CDC/USDA, 2016). While these best practices help to mitigate the possibility of disease transmission, they are only effective if appropriately and consistently applied. For health professionals whose goal is to manage disease risks posed by wild pigs, there is a need to understand if hunters are properly implementing these best practices to not only ensure personal safety, but to also reduce the spread of pathogens. In this regard, social media may offer new insights, allowing researchers to

unobtrusively study social media users' activities, actions, and operations through the content (e.g., text and video) they post.

### **Social Media and the Video Sharing Site, YouTube**

As of 2019, 243.6 million people in the United States (79% of the total U.S. population) were actively using social media (Statista, 2019), with an increase in internet coverage and cell phone use likely playing a role. As a result, social media sites have become an added source of often free data for information about social processes (Lopez, Magliocca, & Crooks, 2019). Furthermore, with its focus on users' activities, relationships, and social networks (Giglietto, Rossi, & Bennato, 2012), social media have fundamentally challenged the standard research practices within the social sciences, providing not only an exceptional amount of available data, but also an unparalleled rate of innovation (Karpf, 2012).

Data from social media sites can provide a wide array of information on users' beliefs, attitudes, and behaviors at specific temporal and spatial scales, as well as throughout varying contexts (Lopez et al., 2019). Social media data that can provide a rich source of information including metadata (i.e. the various pieces of information about a social media post and/or site user), which researchers can access using an application programming interface (API) (Lopez et al., 2019). The various types of data can be used to understand how information disseminates between individuals and across networks, in addition to unveiling the commonality of public opinion and the status of diverse topics (Croitoru et al., 2014). Furthermore, data collected on social media sites may circumvent some of the drawbacks of traditional survey methods, such as misinterpretation of questions (Keeler et al., 2015) and bias linked with providing pre-determined response options (Murphy, Allen, Stevens, & Weatherhead, 2005). It can also further avoid social desirability bias, which is a tendency of respondents to answer or behave in a

manner that would be viewed favorably by others, a common challenge for surveys and interviews (Blackstone, 2012).

Since its development in 2005, YouTube has become a widely visited website, with 1.3 billion users, 5 billion videos viewed daily, and 300 hours of video uploaded every minute (YouTube, 2019). There are three distinguishable forms of site-user interactions: audience interactions (e.g., number of times a video or a channel is viewed), social interactions (e.g., number and type of viewer comments, likes received by a video, or channel subscriptions), and platform interactions (e.g., metadata such as title, date, and uploading account) (Giglietto et al., 2012). These different site-user interactions and metrics available on YouTube enable researchers to explore a broad range of research questions (Giglietto et al., 2012). From a social science perspective, YouTube may evoke a more intimate relationship between those who are posting content and those who are viewing the content in comparison with other online sources (Thelwall, Buckley, & Paltoglou, 2012).

Moreover, scholars have proposed that YouTube data can contribute to our understanding of how nature and the environment, including wild pigs, are framed by everyday people through their interaction and sharing of videos (Mörner & Olausson, 2017). To date, however, there has been little research done to understand the influence of YouTube on sensationalizing wild pig hunting, influencing knowledge and perceptions of wild pigs, and driving the demand for wild pig hunting opportunities (Beasley, Ditchkoff, Mayer, Smith, & Vercauteren, 2018). In addition, more broadly within human-wildlife conflict research, there is a need to evaluate the quantity and quality of social media coverage on wildlife hazards, such as zoonotic diseases, to understand the extent of perceived risks, the type of information available about it, and the consequences it presents in society (Decker et al., 2012).

## **Study Purpose and Objectives**

The purpose of this study was to respond to this lack of research by exploring wild pig hunting videos on YouTube, with a specific focus on investigating disease risk avoidance behaviors by wild pig hunters. The objectives of this study were to: 1) categorize information within each users' channel page for the presence of commercial intent regarding their activity on YouTube, as well as user demographics. Videos posted with commercial intent included those that were apparently prepared, done, or acted with sole or chief emphasis on salability, profit, or success of hunting/outfitting services, hunting/firearms equipment, wild pig meat, etc. 2) categorize the visual content of each video for the presence of hunting-related activities, disease risk avoidance behaviors, and subject demographics; 3) determine whether subjects in the videos were following best practices prescribed by the Centers for Disease Control and Prevention (CDC) and the United States Department of Agriculture (USDA) (2016) to mitigate the disease risks associated with hunting wild pigs; and 4) identify key themes from the textual content associated with each video. Information collected in this research would be useful in expanding our understanding of wild pig hunters, particularly those who use YouTube to share their hunting experiences. Findings would also be helpful in identifying the extent to which hunters are implementing and communicating about best practices to aid in the development and dissemination of information related to the disease risks associated with hunting wild pigs.

## **METHODS**

### **Sampling and Data Collection**

Data for this study were collected from YouTube in July 2019 using an API obtained from Google. The API was used to search for relevant videos and extract transcripts, video MP4 files, and associated metadata. Given that YouTube's standard search optimization sorts videos based on relevance, three searches with differing strings of terms were used to find the first 200

most relevant videos that relate to hunting, field dressing, and butchering of wild hogs in the United States (amounting to a total of 600 videos). The three search strings included: 'wild hog hunting AND the United States', 'wild hog field dressing AND the United States', and 'wild hog butchering AND the United States.' The term 'wild hog' was used because of its popularity within Google search queries in the United States, as determined by Google trends, a tool that shows relevant interest and trending searches for any given keyword(s). Similarly, the term 'United States' was used within each search string to narrow down the search outputs to the country of interest. The terms 'hunting', 'field dressing', and 'butchering' were used because these are three typical activities a person performs during the hunting process that may involve contact with wild pigs.

Code provided by YouTube's Data API was compiled and adjusted for use within Python (Beaverton, Oregon), an interpreted, general-purpose programming language. Once in Python, code was run to extract and export metadata into a Microsoft Excel spreadsheet. A review of all 600 videos was then conducted and any duplicates were removed. Additional metadata that were collected from YouTube included the following: video ID, video title, date published, video transcript, video description, video URL, number of views, number of likes, number of dislikes, number of comments, channel ID, channel title, date channel was published, channel description, channel URL, number of total channel views, number of subscribers, and channel country. The API code also allowed for automatic download of each video to allow for later, off-line viewing. Videos that were unable to be downloaded via Python code were downloaded using Applian's (Fort Myers, Florida) high speed streaming downloader software. If a video did not have an associated transcript on YouTube, the video was transcribed verbatim, including any visual text

that may have appeared in the video. Lastly, all YouTube-generated transcripts were reviewed for accuracy.

Once all videos, transcripts, and corresponding metadata were downloaded and saved into an Excel spreadsheet, a systematic review of all videos was conducted to identify videos of wild pig hunting in the United States that met the following predetermined criteria: (i) it provided a first-person account of wild pig hunting; (ii) all means of communication (either textual or audible) were in English; (iii) it took place within the United States; (iv) living or dead wild pigs (as opposed to domesticated pigs) were highlighted; and (v) it was free to watch. In addition, any videos posted by state and federal government organizations, news stations, or those that did not show realistic or genuine accounts of wild pig hunting (e.g., docudramas and reenactments) were not included for the final analysis. These criteria for selecting authentic, hunter-driven videos were based on information provided by each user's channel page, as well as the content of the video. For example, if it was not apparent that the user was a hunter, the video was then scanned to determine whether the user engaged in wild pig hunting activities. If they did, the video was retained for analysis. Videos posted by hunting groups/organizations and video production companies to benefit hunters were also retained if they depicted actual hunting experiences. All videos selected were posted by individuals or organizations that fell into one or more of the following categories: individual hunters, hunting-related groups/organizations, other organizations/groups showing a member hunting, and video production companies creating and sharing videos on behalf of hunters. After all videos were assessed, a final sample of 118 videos was retained for analysis.

## **Coding and Data Analysis**

The first author viewed and analyzed all videos in the sample, representing 17 hours of video footage. An inductive and deductive approach was taken to analyze data from three distinct sources: users' channel information, video footage, and video transcripts and descriptions. Before analysis, categorizations and codes were formulated corresponding to the best practices prescribed by the CDC and the USDA (2016), as well as those most relevant to the context of wild pig hunting. To begin, information from each user's channel page, as well as each video's footage was characterized for these pre-determined categories (Appendix B). Finally, key themes were identified through deductive coding of transcripts (encompassing in-video audio and visual text), as well as the corresponding video descriptions (Appendix C). Along with this, an iterative process was integrated in which the first author continuously revised interpretations and analysis as new insights were gained. Thus, the discovery of relationships and hypothesis generation arose from the analysis of observations (Dye, Schatz, Rosenberg, & Coleman, 2000). This approach provided the flexibility to analyze the phenomenon of wild pig hunting via YouTube videos with the use of already defined applications for personal safety, while being receptive to alternative and contextual considerations and explanations, one of the stated goals.

*Channel Information.* Characterizations of channel information were designated by accessing each video's corresponding channel page. First, videos were coded for channel type and whether the user or channel creator was posting with commercial intent. Information concerning the identity of the relevant commercial entities was also collected. Other channel information that was collected included the approximate age and gender of the individuals posting each video and channel location by state. If relevant information (e.g., brand-name



companies, visual confirmation of age/gender, and location) was not clearly identified within the user's channel page, other sources including the video content and description, or the user's related social media sites/websites were viewed to locate missing information. If the information was missing or it was still unclear after viewing all available content, the appropriate categories were coded as 'unsure'.

*Video Footage.* The visual content of each video (video footage) was characterized for presence of the following: (i) hunting (conceptualized as scenes that showed an animal being pursued and/or killed); (ii) field dressing; (iii) butchering; (iv) cooking; and (v) any combinations of the preceding four categories. Videos were also coded for general age and gender of the subjects within each video, as well as the approximate number of subjects in the video, including the camera person. In addition, videos were coded for location. If it was not apparent where the video took place from the video content, title, or description, the item was coded as 'unsure'. For those videos that highlighted hunting scenes that showed an animal being pursued and/or killed, the following categories were coded for: hunting methods used, types of weapons used, whether the participants also hunted other species while actively hunting wild pigs (and if so, what species), and whether the hunting activities took place during the day, at night, or both. If any relevant information was not clearly apparent while watching the video, it was coded as 'unsure'. If the content type did not highlight hunting specifically, those categories were coded as 'not applicable'.

In addition to in-video demographics and hunting strategies, videos were coded for the presence of various best practices to mitigate disease risks associated with exposure to wild pigs. Determined according to guidelines promulgated by the CDC and the USDA (2016) the best practices comprised the following: (i) wearing eye protection and disposable or rubber gloves;

(ii) refraining from eating, drinking, or smoking while handling wild pigs; (iii) avoiding bare skin contact with animals; (iv) not allowing pets to eat raw meat or play with carcasses; (v) washing hands with soap and water after handling wild pigs; (vi) cleaning and disinfecting reusable equipment, tools and surfaces; (vii) keeping raw meat separate from cooked meat and all other foods; (viii) keeping all meat cold; and (ix) cooking meat to an internal temperature of 160 degrees Fahrenheit.

*Video Transcripts and Descriptions.* NVivo (Boston, Massachusetts) qualitative data analysis software was used to code each video's transcript and corresponding video description. Key themes related to disease risks and best practices that were coded for included communications about disease transmission from wild pigs to humans, livestock, pets, or other wildlife. Transcripts and descriptions were also coded for communications about keeping wild pig meat cold, using sharp knives, cooking meat thoroughly, or wearing personal protective equipment. Communication about other concerns associated with wild pigs were also coded for, including damage to crops, livestock, property, the environment, or other wildlife. Similarly, transcripts and descriptions were coded for concern about injury to humans and to pets.

In addition, transcripts and descriptions were coded for hunting motivations (e.g., recreation, procurement of meat, controlling wild pig damage) and sentiment towards wild pigs and wild pig hunting. Other themes that were coded included promotion of brand-name equipment and/or hunting-related companies. Lastly, transcripts and descriptions were coded for any mentions of hunting laws and regulations, hunting rights, ethical hunting, and wild pig biology/ecology (regardless of accuracy).

Upon completion of thematic analysis, the test-retest reliability was assessed to determine the reliability of the thematic coding over time (i.e., verify that themes were accurately and

consistently identified between time one and time two) given that only one coder conducted the analysis. Performing a test-retest reliability assessment produces a coefficient of stability that ranges from 0 to 1.0. The closer the coefficient is to 1.0, the more reliable the coding analysis is considered to be (Huck, 2008). In this case, the test-retest reliability over a 3-month period produced a coefficient of stability equal to 0.94, as assessed for 18 randomly sampled video transcripts and descriptions (15% of entire sample).

## FINDINGS

### **Characterizations: Channel Information and Video Footage**

There were approximately 75 million views, 500,000 “likes”, and 70,000 comments associated with the 118 videos selected for analysis. On average, users posted 587 videos to their channel page and had an average of 294,000 subscribers or followers. Of the videos with an identifiable location, 48% ( $n = 57$ ) took place in the state of Texas, while the remaining videos took place in 13 other states across the United States. Ninety-five percent ( $n = 112$ ) highlighted some form of hunting where wild pigs were seen being pursued and/or killed. Of those that highlighted these hunting activities, the most common methods seen were spot and stalk (a type of hunting method where the goal is to see the animal before it sees you, allowing time to formulate a plan of action), followed by hunting with dogs, and shooting over a bait site. The most common weapon used to kill pigs was a rifle, followed by a compound bow. Other uncommon weapons used included air guns, handguns, knives and swords, as well as cannons and use of explosives. Sixty-nine percent of videos ( $n = 82$ ) that highlighted wild pigs being pursued and/or killed took place during the day, while 27% of such videos ( $n = 32$ ) took place at night, often with the use of thermal night vision.

Approximately 83% of the users ( $n = 98$ ) posting these videos were identified as an adult male while the remaining 17% of users were identified as various combinations of ages and

gender or were unidentifiable. Seventy-six percent of users ( $n = 90$ ) were identified as a hunting group/organization, and 17% ( $n = 20$ ) were identified as being an individual hunter. Other types of channel users identified were those that encompass other media companies and groups/organizations that did not have a hunting focus, but rather were producing and/or posting their videos to promote hunters and their hunting activities. Lastly, 86% of users ( $n = 102$ ) exhibited a commercial intent in regard to their activity on YouTube; that is they were seen as preparing, doing, or acting with sole or chief emphasis on salability, profit, or success of hunting/outfitting services, hunting/firearms equipment, wild pig meat, etc.

### **Key Themes: Video Transcripts and Descriptions**

Thematic analysis of video transcripts and corresponding descriptions revealed seven key themes: 1) promotion and marketing of brand-name companies, 2) positive sentiment toward hunting wild pigs and consuming harvested meat, 3) negative sentiment toward live wild pigs and positive sentiment toward dead wild pigs, 4) hunting motivated by a desire to control wild pigs, 5) hunting motivated by a desire to obtain meat, 6) sharing of knowledge about wild pig biology/ecology, and 7) concern about damage and direct injury from wild pigs to humans and/or pets.

With regard to the first key theme, *promotion and marketing of brand-name companies*, 86% of videos ( $n = 101$ ) referenced companies that were either visible through their logos or mentioned in the video audio and/or visual text. The companies included, non-hunting related businesses sponsoring production of the video (e.g., DFT Construction), TV shows/channels (e.g., The Sportsman Channel) and media production companies (e.g., Deer Camp Productions), cooking-related companies (e.g., Traeger Grills), outdoor gear companies (e.g., Bass Pro Shops), and hunting-related companies (e.g., Reconyx and Winchester). With regard to the second key

theme, *positive sentiment toward hunting wild pigs and consuming harvested meat*, 60% of videos ( $n = 71$ ) expressed a positive view of the activities encompassing wild pig hunting, as well as consuming their harvested meat (Table 2.1). For example, one subject expressed their positive attitude for hunting wild pigs in which they stated, “there isn't any magic medicine or pharmaceuticals that will get rid of them [wild pigs]. Just hunters like us that love to play the game and gamble with these beasts.” Another subject also conveyed their enjoyment in consuming harvest pig meat by saying, “They taste very good. Free pork, can't beat it!”

The third key theme, *negative sentiment toward live wild pigs and positive sentiment toward dead wild pigs*, was present in 50% of videos ( $n = 59$ ) (Table 2.2). For instance, subjects were quoted, “these big nasty hogs... they're a nuisance” while actively hunting live wild pigs. Some subjects were also quoted, “shot a hell of a hog. Good 300, 325 [lbs.]. Beautiful color, nice teeth” once the wild pig was killed. With regard to the fourth key theme, *hunting motivated by a desire to control wild pigs*, approximately 42% of videos ( $n = 49$ ) communicated that the motive for hunting wild pigs was the desire to control wild pig numbers and resulting damages (Table 2.3). An illustration of this was seen when a subject stated, “part of the reason for me shooting these hogs is... the hogs, they're coming in here and they're absolutely tearing this up.” The fifth key theme, *hunting motivated by a desire to obtain meat*, was present in 17% of videos ( $n = 20$ ) (Table 2.4). This was highlighted when a subject expressed, “feral hogs are one of the most popular animals there is to hunt now and the reason why is well, if you've ever put a fork in one you'll figure it out.”

The sixth key theme, *sharing of knowledge about wild pig biology/ecology*, was present in approximately 26% of videos ( $n = 31$ ). Such knowledge included information about typical wild pig behavior and the species' role in the environment (Table 2.5). In one case, a subjected

stated, “wild boar are omnivorous and approximately 400 species of plants and animals have been reported to be part of their diet.” Lastly, the seventh key theme, *concern about damage and direct injury from wild pigs to humans and/or pets*, was present in 16% of videos ( $n = 19$ ). The concerns that were expressed included concerns over destruction of crops, personal property, and the environment, as well as competition and predation on livestock and other wildlife (Table 2.6). For example, a subject was quoted, “they [wild pigs] can harm and destroy livestock.” Some hunters also expressed concern over injury from wild pigs to themselves, others, and their pets (primarily hunting dogs) by saying, “I can't believe we found that pig and I can't believe he almost ate us up.”

### **Best Practices to Mitigate Disease Risks**

Analysis of channel information, video footage, and video transcripts and descriptions revealed approximately 27% of videos ( $n = 32$ ) contained one or more best practices to mitigate disease risks associated with exposure to wild pigs (Table 2.7). Of the 32 videos, all exhibited at least one of the best practices in the video footage (i.e., there was visual evidence that a best practice was being followed). In a smaller number of these 32 videos (five), the subjects communicated to viewers about one or more best practice. In particular, the subjects communicated about wearing disposable gloves, chilling harvested meat, cooking meat to a high internal temperature, and using sharp knives when butchering. However, in none of the videos that showed subjects exhibiting best practices or communicating about them did the subjects state that the purpose of the practice was to avoid disease transmission. In only one video did a subject communicate about the potential for disease transmission from wild pigs (in this case to domestic livestock), but the video was not among the 32 that contained visual evidence of best practice implementation.

## DISCUSSION

Overall, we found a relatively small number of behaviors and communications evidencing an awareness of wild pig disease risks and best practices in the sampled YouTube videos. Only 27% of the videos showed subjects exercising one or more best practices, and none of these subjects connected the practice to avoidance or mitigation of disease-related risks. Moreover, among the 32 videos in which subjects exhibited or discussed one or more best practices, several also showed behaviors that increased exposure and disease risk to the subjects and to other animals. For example, three of the videos revealed subjects consuming food and beverages while handling wild pigs; one video showed a subject putting raw wild pig meat into a cooler with other food; and another showed cats consuming wild pig blood during the butchering process. A subject in one of the videos also communicated that the loin of a harvested wild pig could be eaten raw. Lastly, in none of the videos was a subject seen washing their hands, or cleaning tools or surfaces when field dressing, butchering, or cooking. While these behaviors could have occurred off camera, it is nevertheless the case that many viewers may pattern their own behaviors based off of those they view on YouTube. In that sense, the creators of these videos could be unwittingly contributing to the formation of norms that expose wild pig hunters to greater risk of disease.

While it may be the case that our findings are evidence of the subjects' lack of knowledge or lack of concern about wild pig disease risks and best practices, certain key themes that emerged from our analysis lead us to propose another possible hypothesis. Given the prominence of brand promotion and corporate sponsorship in the videos, the creation and editing of the videos may have been partly motivated and informed by a desire to encourage participation in wild pig hunting and the purchase of associated equipment and services. Communications or

behaviors that highlight risks associated with the activity could undermine that objective. We point out that several subjects in the videos communicated ample knowledge about wild pig behavior and ecology, which somewhat undercuts the notion that they may have lacked basic knowledge about wild pig disease risks.

While it is clear there is a lack of information on wild pig disease risks and best practices in the sampled videos, we cannot conclude that the creators and subjects lacked knowledge of this information. However, as we alluded to above, their knowledge (or lack of knowledge) on these topics may be of less significance than the effect the videos may have on the thousands of users who watch the videos. Indeed, it is conceivable that social media may be the primary source of wild pig hunting information for many of those viewers, affecting their knowledge, beliefs, and attitudes. Multiple studies have also shown that content on social media can influence and shape the behaviors of social media users (DiGrazia, McKelvey, Bollen, & Rojas, 2013; Korda & Itani, 2013; Kumar, Bezawada, Rishika, Janakiraman, & Kannan, 2016). This has implications for public health officials and policy makers concerned with wild-pig related disease transmission. Public health campaigns to increase knowledge of wild pig disease risks and best practices associated with handling wild pigs are essential (Brown et al., 2018). This will be important not only to encourage members of the public, including hunters, to take measures to protect their health, but also to reduce opportunities for disease spread by further discouraging the translocation of wild pigs for hunting opportunities (Brown et al., 2018). This has implications not only for domestic spread of diseases but also introduction of emerging foreign animal diseases carried by wild pigs such as African swine fever.

Given this need to formulate effective health campaigns to increase knowledge surrounding wild pig disease risks and best practices, social media may provide opportunities to



effectively communicate these messages to the public and hunters. For example, YouTube, with its 1.3 billion users, has the capability to reach vast audiences. Furthermore, with consideration that many users on YouTube who are sharing wild pig hunting videos have experienced millions of views, as well as gained thousands of subscribers, there may be opportunities for agencies to connect with and recruit these well-known and active users to help in the development and communication of their messages to the hunter stakeholder group. Research shows that opinion leaders or influencers, who are often chosen by their peers as people they turn to for expertise and discussion about certain topics, are likely to be true sources of influence (Iyengar, Van den Bulte, & Valente, 2011; Rogers, 2010). There may also be opportunities for agencies to create working relationships with the retailers and brand-name companies that were found to be large contributors to the creation and focus of the sampled YouTube videos.

Moving forward, future research could benefit from expanding on this topic and by addressing certain limitations found in this study. First, there is room to explore the data output provided by other search terms not used in this study. This might be useful in improving our understanding of what effect the terminology of techniques related to hunting (e.g., field dressing) and the common names for wild pigs (e.g., feral hog) have on the type of YouTube videos that are presented within a search. Further investigation of wild pig hunting videos posted by government agencies, news stations, and other user sources not analyzed in this study would also be useful. Next, There are opportunities to further explore the degree to which people are communicating about disease risks associated with hunting wild pigs and the extent to which they are implementing best practices within other media outlets (e.g., television and magazines) and social media platforms (e.g., Instagram and Facebook) given their reach and impact on many psychological processes (Strasburger, 2004). More so, however, there is a need to understand the

knowledge and perceptions related to disease risks and best practices more broadly among the public, hunters, and other groups who may occasionally come into contact with wild pigs, as well as the barriers faced in implementing best practices. While this may be more easily determined through traditional social science research methods (e.g., surveys and interviews), incorporating findings from social media research with established methods may reveal some significance as we continue to explore and comprehend what role social media play in developing precursors to human attitudes and behaviors.

In conclusion, this study provided new contributions to existing research by expanding our knowledge of wild pig hunters in the United states. More specifically, this study provided unique insight into wild pig hunters who use YouTube to share their hunting experiences with other social media users. Findings were not only useful in improving our understanding of hunters' knowledge and perceptions of wild pigs, but also in identifying what influence YouTube may have on dramatizing wild pig hunting and potentially driving the demand for hunting opportunities. In addition, findings were useful in detecting the extent to which hunters were implementing and communicating about best practices for personal safety and were helpful in recognizing the lack of information available on YouTube about disease risks associated with hunting wild pigs and best practices. Together, this newfound information recognizes the need for the creation and distribution of information related to the disease risks associated with exposure to wild pigs. This will be important not only to encourage hunters, and others who may come into contact with wild pigs, to take the proper measures to protect their health, but to moderate opportunities for further disease spread by discouraging the translocation of wild pigs for hunting opportunities.

## TABLES

Table 2.1. Examples of key theme: Positive sentiment toward wild pig hunting and consuming harvested meat.

Positive sentiment towards wild pig hunting	<p>“There isn't any magic medicine or pharmaceuticals that will get rid of them. Just hunters like us that love to play the game and gamble with these beasts.”</p> <p>“There’s just something about ‘em that just really gets your blood going man and it’s just, I’ve had the privilege to shoot a lot of these and I hope I can shoot a lot more.”</p> <p>“They’re fun to hunt, they’re a real challenge and all I can tell ya is that if you haven’t ever done this, it’s more affordable than you think and it’s a whole lot more fun than you think.”</p> <p>“Hog hunting is exciting!”</p>
Positive sentiment towards consuming harvested meat	<p>“They taste very good. Free pork, can't beat it.”</p> <p>“Hog is lean and tender and bursting with flavor.”</p> <p>“If you went into a restaurant and ordered one of these you’d probably pay a thousand dollars! It just don’t get no better.”</p> <p>“Take that little bitty guy over there, skinned him out, put some onions and some peppers, put him in foil, throw him on the smoker, mmm good stuff right there guys.”</p>

Table 2.2. Examples of the key theme: Negative sentiment toward live wild pigs and positive sentiment toward dead wild pigs.

Negative sentiment toward alive wild pigs	<p>“350+ pound mean gnarly giant boar hog.”</p> <p>“Hogs are the most prolific pest in the world and we have to take every measure we possibly can to kill as many as we can.”</p> <p>“One of the meanest beasts in North America!”</p> <p>“These big nasty hogs...they’re a nuisance.”</p>
Positive sentiment toward dead wild pigs	<p>“Of course, thanks to the hogs. Thank you hogs for all the fun. Thank you hogs for all the joy and excitement you brought us today.”</p> <p>“Shot a hell of a pig. Good 300, 325 [lbs.]. Beautiful color, nice teeth.”</p>

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“But these right here, these are two awesome pigs, two boar pigs, really good. And look at the cutters on this one...Look at the cutters on that dude! That's good.”

“Got some great hogs.”

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Table 2.3. Examples of the key theme: Hunting motivated by a desire to control wild pigs.

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Motivation to control wild pig populations and damage	“The video you are about to see consists of some crazy Texans doing their part to help control the wild pig population...”
---	--

“Hunters can come in and reduce the populations.”

“Part of the reason for me shooting these hogs is... the hogs, they're coming in here and they're absolutely tearing this up.”

“We're helping out the farmers cause these pigs are just tearin' up the cows' habitat.”

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Table 2.4. Examples of the key theme: Hunting motivated by a desire to obtain meat.

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Motivation to obtain harvested meat	“So, we should be able to get a lot of piggy's for you to come kill them, grill them, and eat them.”
-------------------------------------	--

“We must eat them!”

“All of the useful meat from this animal is going to be made into appetizers at a baby's first luau or a wedding.”

“Feral hogs are one of the most popular animals there is to hunt now and the reason why is well, if you've ever put a fork in one you'll figure it out.”

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Table 2.5. Examples of the key theme: Sharing of knowledge about wild pig biology/ecology.

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Wild pig biology/ecology	“Gestation period: 115 days. Females can have their first litter as young as 6 months old. One sow with litter can turn into over 70 hogs in only 9 months...”
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“What they do is they bed for 10-15 minutes, they get up, root around, bed again, find a wallow, cool off, get up, root around.”

“Despite its poor eyesight it possesses keen senses of smell and hearing.”

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“Wild boar are omnivorous and approximately 400 species of plants and animals have been reported to be part of their diet.”

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Table 2.6. Examples of key theme: Concern about damage and direct injury from wild pigs to humans and/or pets.

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Concern for damage	<p>“They tear up food plots.”</p> <p>“They cause extensive damage to habitats.”</p> <p>“They can harm and destroy livestock.”</p> <p>“...all of our cow pastures are just demolished from these wild hogs.”</p> <p>“They force the deer out and the turkey out.”</p>
Concern for injury	<p>“I can't believe we found that pig and I can't believe he almost ate us up.”</p> <p>“That thing could have hurt you if it had got you.”</p> <p>“Just wait, I don't want the boar to kill him.”</p> <p>“The reason we vest our pets is to protect them from getting cuts on their chest.”</p>

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Table 2.7. Total number of YouTube videos coded to each best practice category.

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Best practice	Total number of videos
Wearing disposable gloves	7
Wearing eye protection	18
Chilling harvested meat	6
Keeping harvested meat separate from other foods	17
Cooking harvested meat to high internal temperature	1
Using a sharp knife when field dressing or butchering	1

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APPENDIX A: SURVEY INSTRUMENT

TEXAS A&M  
AGRI LIFE  
EXTENSION

Human Dimensions of Wild Pigs  
Survey Packet



Principal Investigators: Dr. John Tomeček and Dr. Maureen Frank

Welcome to the Texas A&M AgriLife Human Dimensions of Wild Pigs Survey!

We thank you for choosing to help us in our research!

You are one of a small number of participants who were randomly selected to participate in our survey. This study is designed to allow Texas A&M AgriLife Extension Service to better understand hunter, landowner, and stakeholder opinions about wild pigs and management practices for the species.

Please review the following information sheet and before proceeding to the survey.

Then, please complete the questions contained in this survey booklet and return the survey in the postage-paid return envelope provided.

In this survey, the term "wild pig" refers to any free-roaming and free-living swine. Other names for wild pigs include feral swine, feral pig, wild hog, and wild boar. The term "wild pig" does not include native wild animals, such as the collared peccary, also known as the javelina.

If you have any problems completing the survey, please contact Rachael Connally for assistance. You can reach Rachael by phone at 979-583-2205 or by email at Rachael.Connally@tamu.edu.

Your responses are important to use and we hope that you enjoy completing our survey and the chance to voice your opinions about wild pigs!

Thank you for your time and participation.

*John M. Tomecek*

**John M. Tomeček, Ph.D.**  
Principal Investigator  
Assistant Professor &  
Extension Wildlife Specialist

*Maureen G. Frank*

**Maureen G. Frank, Ph.D.**  
Co-Investigator  
Assistant Professor &  
Extension Wildlife Specialist

*Rachael L. Connally*

**Rachael L. Connally**  
Graduate Research Assistant

Texas A&M University Human Research Protection Program  
Information Sheet

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Title of Research Study: Human Dimensions of Wild Pigs

Investigators: Dr. John Tomeček and Dr. Maureen Frank

Why am I being asked to take part in this research study?

You are invited to participate in this study because we are trying to learn more about hunter, landowner, and stakeholder opinions about wild pigs and management practices for the species.

You were selected as a possible participant in this study through a random sample of individuals within stakeholder groups, such as hunting, agricultural, and environmental interest groups. You must be 18 years of age or older to participate in this survey.

Why is this research being done?

The study is designed to allow researchers to better understand stakeholder perceptions and knowledge about wild pigs and their management in the state of Texas.

How long will the research last?

The questionnaire is expected to take approximately 30 minutes to complete.

What will I be asked to do in this study?

You will be asked to answer a series of questions about your thoughts and opinions on the resource use, economic impacts, and management of wild pigs.

What happens if I do not want to be in this research?

Your participation in this study is voluntary. You can decide not to participate in this research and it will not be held against you. You can leave the study at any time.

Are there any risks to me?

No risks are expected to participants in the study. There are no sensitive questions in this survey that should cause discomfort. However, you can skip any question you do not wish to answer, or exit the survey at any point.

Are there any benefits to me?

No benefits are expected to participants in the study.

What happens to the information collected for the research?

Efforts will be made to limit the use and disclosure of your personal information, including research study and other records, to people who have a need to review this information. We cannot promise complete privacy. Organizations that may inspect and copy your information include the TAMU HRPP and other representatives of this institution. No identifiers linking you to this study will be included in any sort of report that might be published.

Who can I talk to?

Please feel free to ask questions regarding this study. You may contact the Principal Investigator, John Tomeček, by phone at 325-650-3520 or by email at [tomecek@tamu.edu](mailto:tomecek@tamu.edu).

For questions about your rights as a research participant; or if you have questions, complaints, or concerns about the project, you may call the Human Research Protection Program at Texas A&M University (which is a group of people who review the research to protect your rights) by phone at 1-979-458-4067, toll free at 1-855-795-8636, or by email at [irb@tamu.edu](mailto:irb@tamu.edu).

Section 1: Hunting

1. Do you hunt in Texas?

- Yes  No

**If you do not hunt in Texas, please skip to Section 2 on page 3.**

2. Which types of animals do you hunt in Texas?

Please rank all that apply, with **1** being the animal you hunt **most often**.

Please include **all** animals that you hunt for both recreational and management purposes.

<input type="text"/>	Wild pigs	<input type="text"/>	Exotics (axis, black buck, fallow, elk, etc.)
<input type="text"/>	White-tailed deer	<input type="text"/>	Migratory game birds (dove, duck, goose, etc.)
<input type="text"/>	Mule deer	<input type="text"/>	Upland game birds (quail, turkey, pheasant, etc.)
<input type="text"/>	Javelina	<input type="text"/>	Other (fur-bearing animals, predators, rabbits, etc.)
<input type="text"/>	Pronghorn		

**If you do not hunt wild pigs, please skip to Section 2 on page 3.**

3. What are the most important reasons that you hunt wild pigs?

Please rate the following reasons from "not at all important" to "very important".

	Not at all important 1	Not very important 2	A little important 3	Fairly important 4	Very important 5
Meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trophies (skull, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recreation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Controlling wild pig population	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Controlling wild pig damage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. How many wild pigs did you harvest while hunting in 2018?

wild pigs

5. How many days did you spend hunting wild pigs in Texas in 2018?

days

6. How many days did you spend hunting other large game animals in Texas in 2018?

Please include days that you hunted deer, exotics, and any big game animals except wild pigs.

days

**7. Which statement best describes the majority of your hunting trips?**

- I exclusively hunt wild pigs on most of my hunting trips.
- I primarily hunt wild pigs, but will harvest a native game animal if I see one.
- I hunt wild pigs and native game animals about equally during the same trip.
- I primarily hunt native game animals, but will harvest a wild pig if I see one.
- I exclusively hunt native game animals and do not hunt wild pigs on most of my hunting trips.

**8. How much money did you spend on wild pig hunting-related purchases in 2018?**

Please estimate the costs of the following items to a whole dollar amount.

Hunting lease(s) or access fees	\$	<input type="text"/>	.00 (dollars only)
Tour operator or guide fees	\$	<input type="text"/>	.00 (dollars only)
Overnight accommodations	\$	<input type="text"/>	.00 (dollars only)
Transportation	\$	<input type="text"/>	.00 (dollars only)
Meals	\$	<input type="text"/>	.00 (dollars only)
Ammunition	\$	<input type="text"/>	.00 (dollars only)
Bait / Attractant	\$	<input type="text"/>	.00 (dollars only)
Processing or taxidermy	\$	<input type="text"/>	.00 (dollars only)
Hunting tools / guns and accessories	\$	<input type="text"/>	.00 (dollars only)
Other, please specify:	\$	<input type="text"/>	.00 (dollars only)

**9. How would you describe the present size of the wild pig population in the areas where you most often hunt them?**

- Too low
- About right
- Too high

**10. What type of property do you typically use to hunt wild pigs?**

Please select all that apply.

- Personal property
- Family-owned or friend's property
- Leased property
- Property I manage
- Public land
- Private property while on a guided hunt
- Private property by landowner request
- Other, please specify:

**11. During which times of the year do you typically hunt wild pigs?**

Please select all that apply.

- Spring
- Summer
- Fall
- Winter

**12. Where do you typically hunt wild pigs?**

Please select all that apply.

- |   |   |
|---|---|
| <input type="checkbox"/> Rangeland                  | <input type="checkbox"/> Near artificial food sources (livestock feeders, etc.) |
| <input type="checkbox"/> Agricultural fields        | <input type="checkbox"/> Near natural or artificial water sources               |
| <input type="checkbox"/> Pastures                   | <input type="checkbox"/> Thick brush or forests                                 |
| <input type="checkbox"/> Roads or wildlife openings | <input type="checkbox"/> Other, please specify:                                 |

Please indicate the level to which you agree with the following statements by writing the corresponding number in each box.

	Strongly disagree 1	Somewhat disagree 2	Neither agree nor disagree 3	Somewhat agree 4	Strongly agree 5
<b>13.</b> Wild pigs increase hunting opportunities for me and my family.	○	○	○	○	○
<b>14.</b> I would go hunting for other animals more if wild pigs were less available to hunt.	○	○	○	○	○
<b>15.</b> I prefer to hunt wild pigs even when other animals are available for me to hunt.	○	○	○	○	○
<b>16.</b> Wild pigs are less enjoyable to hunt than other animals.	○	○	○	○	○
<b>17.</b> I started hunting wild pigs before I became interested in hunting other animals.	○	○	○	○	○
<b>18.</b> I devote more time to hunting wild pigs than other animals.	○	○	○	○	○
<b>19.</b> I only purchase my hunting license to hunt wild pigs.	○	○	○	○	○

**20. Which of the following personal protective equipment do you use when handling wild pigs?**

Please select all that apply.

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Rubber gloves      | <input type="checkbox"/> Tick repellent                 | <input type="checkbox"/> Long sleeves and pants |
| <input type="checkbox"/> Protective eyewear | <input type="checkbox"/> Soap                           | <input type="checkbox"/> None                   |
| <input type="checkbox"/> Face mask          | <input type="checkbox"/> Knife and surface disinfectant | <input type="checkbox"/> Other, please specify: |

**Section 2: Trapping**

**1. What types of traps do you use for wild pigs?**

Please select all that apply.

- |                                     |   |  |
|-------------------------------------|---|--|
| <input type="checkbox"/> Snares     | <input type="checkbox"/> Corral traps     | <input type="checkbox"/> Drop-style traps                      |
| <input type="checkbox"/> Cage traps | <input type="checkbox"/> Figure 6 traps   | <input type="checkbox"/> I do not use any traps for wild pigs. |
| <input type="checkbox"/> Box traps  | <input type="checkbox"/> Figure "C" traps | <input type="checkbox"/> Other, please specify:                |

**If you do not use traps for wild pigs, please skip to Section 3 on page 4.**

2. How many wild pigs did you harvest by trapping or snaring in 2018?

wild pigs

3. Have you ever trapped and sold live wild pigs?

- Yes  No

**If you have never trapped and sold wild pigs, please skip to Section 3 on page 4.**

4. How many wild pigs did you sell in 2018?

wild pigs

5. How much income did you make by trapping and selling pigs in 2018?

\$  .00 (dollars only)

6. What type of property do you typically use to trap wild pigs?

Please select all that apply.

- |  |  |
|--|--|
| <input type="checkbox"/> Personal property                 | <input type="checkbox"/> Public land                             |
| <input type="checkbox"/> Family-owned or friend's property | <input type="checkbox"/> Private property while on a guided hunt |
| <input type="checkbox"/> Leased property                   | <input type="checkbox"/> Private property by landowner request   |
| <input type="checkbox"/> Property I manage                 | <input type="checkbox"/> Other, please specify:                  |
- 

7. During which times of the year do you typically trap wild pigs?

Please select all that apply.

- |                                 |                                 |
|---------------------------------|---------------------------------|
| <input type="checkbox"/> Spring | <input type="checkbox"/> Fall   |
| <input type="checkbox"/> Summer | <input type="checkbox"/> Winter |

8. Where do you typically trap wild pigs?

Please select all that apply.

- |   |   |
|---|---|
| <input type="checkbox"/> Rangeland                  | <input type="checkbox"/> Near artificial food sources (livestock feeders, etc.) |
| <input type="checkbox"/> Agricultural fields        | <input type="checkbox"/> Near natural or artificial water sources               |
| <input type="checkbox"/> Pastures                   | <input type="checkbox"/> Thick brush or forests                                 |
| <input type="checkbox"/> Roads or wildlife openings | <input type="checkbox"/> Other, please specify:                                 |
- 

Section 3: Guide Services

1. Did you provide any wild pig guide or outfitting services to paying hunters in 2018?

- Yes  No

**If you did not provide these services, please skip to Section 4 on page 5.**

2. How much income did you make by providing wild pig guide or outfitting services to paying hunters in 2018?

\$  .00 (dollars only)



Section 4: Land Management

1. Do you own or manage land in Texas?

- Yes                       No

**If you do not own land in Texas, please skip to Section 5 on page 6.**

2. What are the uses of the land you own or manage in Texas?

Please rank all that apply by importance, with **1** being the **most important**.

	Private residence		Personal recreation (hunting, fishing, leisure, etc.)
	Farming or crop production		Lease hunting (include guide services, outfitting, etc.)
	Ranching - Domestic livestock		Natural gas or oil extraction
	Ranching – Native wildlife (deer, quail, etc.)		Timber production
	Ranching – Exotic wildlife		Other, please specify:

3. What is the size of the largest property you own or manage in Texas?

acres

4. Please mark all of the areas in which wild pigs had negative impacts on your property in the past year.

- |  |  |
|--|--|
| <input type="checkbox"/> Growing or planting commodity crop losses | <input type="checkbox"/> Fences, water troughs, or other improvements      |
| <input type="checkbox"/> Growing or planting specialty crop losses | <input type="checkbox"/> Equipment or vehicles                             |
| <input type="checkbox"/> Stored Commodities                        | <input type="checkbox"/> Personal injuries                                 |
| <input type="checkbox"/> Pastures                                  | <input type="checkbox"/> Loss of land value                                |
| <input type="checkbox"/> Wetlands                                  | <input type="checkbox"/> Loss of lease value, damage to food plots/feeders |
| <input type="checkbox"/> Livestock (injury, deaths, diseases)      | <input type="checkbox"/> Owner or employee time                            |

5. Please mark all of the control methods you use on your property(s).

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Trapped & destroyed          | <input type="checkbox"/> Owner/Employee hunting | <input type="checkbox"/> Use of snares   |
| <input type="checkbox"/> Trapped & moved from premise | <input type="checkbox"/> Lease hunting          | <input type="checkbox"/> Aerial shooting |
| <input type="checkbox"/> Trapped & sold               | <input type="checkbox"/> Use of dogs            | <input type="checkbox"/> Other           |

6. Please estimate your total economic losses due to wild pigs in 2018 on all your property(s).

\$  .00 (dollars only)

7. How much income did you make by leasing wild pig hunting rights in 2018?

\$  .00 (dollars only)

Section 5: Attitudes, Knowledge, and Perceptions

1. What change would you like to see in wild pig population numbers in the state of Texas?

- Completely removed     Reduced     Remain the same     Increase     I do not know.

2. Which of the following types of wild pig control methods do you think are, or would be, **effective**?

Please indicate the level of effectiveness for each method on the scale below.

	Completely ineffective 1	Somewhat ineffective 2	Neutral 3	Somewhat effective 4	Completely effective 5
Trap and lethally remove	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trap and sell	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of a safe, humane toxicant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of dogs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of snares	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-lethal deterrents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lease hunting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Owner/employee hunting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Government or agency hunting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aerial shooting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Which of the following types of wild pig control methods are, or would be, personally **acceptable** to you?

Please indicate the level of acceptability for each method on the scale below.

	Completely unacceptable 1	Somewhat unacceptable 2	Neutral 3	Somewhat acceptable 4	Completely acceptable 5
Trap and lethally remove	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trap and sell	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of a safe, humane toxicant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of dogs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of snares	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-lethal deterrents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lease hunting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Owner/employee hunting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Government or agency hunting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aerial shooting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Please indicate your level of concern for the following types of damage caused by wild pigs.

	No concern 1	Low level of concern 2	Moderate level of concern 3	High level of concern 4	Very high level of concern 5
Crop losses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stored commodity losses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Damage to pastures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Damage to wetlands	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Habitat degradation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Damage to water quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Damage to personal property	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Loss of land value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Loss of lease value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Livestock injury or disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wildlife competition or predation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Human disease or injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Based on your current knowledge of wild pigs, please mark each of the following statements as either true or false.

	True	False	I am unsure.
5. <u>Wild pigs can carry diseases that can be spread to domestic animals.</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. <u>Wild pigs are native to Texas.</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. <u>Wild pigs can carry diseases that can be spread to humans.</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. <u>Wild pigs are a different species than domestic pigs.</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. <u>Wild pigs can breed year-round in Texas.</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. <u>Wild pigs have an average of 12 piglets per litter.</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. <u>Wild pigs kill livestock and wildlife as a primary source of food.</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. <u>Wild pigs are present in less than 70% of Texas counties.</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. <u>Wild pigs are regulated as a game animal in the state of Texas.</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. <u>There are legal restrictions on the transportation, release, and holding of live wild pigs in Texas.</u>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**15.** How has each of the following affected the number of wild pigs in the county where you live?

	Substantially Decreased 1	Somewhat Decreased 2	No Change 3	Somewhat Increased 4	Substantially Increased 5	I am unsure.
Hunting of wild pigs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Neighbor's agriculture practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trapping of wild pigs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Predators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Release or escape of domestic pigs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Release or transfer of wild pigs for hunting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural movement of wild pigs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of food sources for wild pigs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Absentee landowners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate the level to which you agree with the following statements by writing the corresponding number in each box.

	Completely disagree 1	Somewhat disagree 2	Neither agree nor disagree 3	Somewhat agree 4	Completely agree 5
<b>16.</b> Wild pigs increase my overall quality of life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>17.</b> The harm caused by wild pigs outweighs any benefits of having them in Texas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>18.</b> Wild pigs are a valuable resource for recreation, meat, or income in Texas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>19.</b> Wild pigs do not belong in Texas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>20.</b> Overall, my feelings about wild pigs in Texas are generally positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>21.</b> Wild pigs are a nuisance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>22.</b> Wild pigs have the right to exist wherever they may occur.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>23.</b> It should be legal to release live wild pigs anywhere in Texas in order to hunt them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>24.</b> It should be legal to transport live feral hogs anywhere in the U.S. without restrictions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>25.</b> I would feel comfortable using a safe, humane toxicant to control wild pig populations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>26.</b> I would feel comfortable consuming the meat of a wild pig if safe, humane toxicants were used near where the animal was harvested.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

27. Please tell us more about your position on a safe, humane toxicant for wild pigs.


**Section 6: AgriLife Educational Outreach**

1. Have you ever attended an AgriLife educational seminar on wild pigs?

- Yes                       No                       I am not sure.

**If you have not attended an AgriLife educational seminar on wild pigs, please skip to Section 7 on page 10.**

2. Please mark all practices that you planned to adopt, adopted, and continue to use in order to better manage wild pigs on your property after attending an AgriLife educational seminar.

	Planned to adopt	Adopted	Continue to use
Use larger traps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use baits with scent appeal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vary/change baits at different locations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Set traps whenever fresh sign appears	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pre-bait traps to encourage consistent pig visits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scout for pig sign (tracks, wallows, rubs, hair)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wear eyewear and gloves during field dressing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Market trapped pigs to processors to recoup losses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Please indicate the reasons why you do not continue to use the suggested practices that you adopted following an AgriLife education seminar.

Please check all that apply.

- |   |  |
|---|--|
| <input type="checkbox"/> Financial expenses                   | <input type="checkbox"/> I am unconcerned about wild pigs on my property.                |
| <input type="checkbox"/> Time expenses                        | <input type="checkbox"/> I found these practices unimportant.                            |
| <input type="checkbox"/> Physical difficulties                | <input type="checkbox"/> I saw no results using these methods.                           |
| <input type="checkbox"/> Confusion due to lack of information | <input type="checkbox"/> I still employ all methods that I initially intended to employ. |
| <input type="checkbox"/> Not applicable on my property        | <input type="checkbox"/> Other, please specify:  |

\_\_\_\_\_

Section 7: Information Sources

**1. What AgriLife Extension Service resources have you used to learn about wild pigs?**

Please select all that apply.

- |   |  |
|---|--|
| <input type="checkbox"/> Communication with AgriLife Extension agents | <input type="checkbox"/> Articles or publications                |
| <input type="checkbox"/> Educational seminars                         | <input type="checkbox"/> Webinars                                |
| <input type="checkbox"/> Social media                                 | <input type="checkbox"/> I have not used any AgriLife resources. |
| <input type="checkbox"/> Online videos                                | <input type="checkbox"/> Other, please specify:                  |
- 

**2. What other resources have you used to learn about wild pigs?**

Please select all that apply.

- |   |   |
|---|---|
| <input type="checkbox"/> Communication with state wildlife professionals (TPWD) | <input type="checkbox"/> Communication with federal wildlife professionals (APHIS, USDA, USFWS, etc.) |
| <input type="checkbox"/> Educational seminars                                   | <input type="checkbox"/> Communication with other hunters, landowners, farmers, or ranchers           |
| <input type="checkbox"/> Local newspaper or news broadcast                      | <input type="checkbox"/> Articles or publications   |
| <input type="checkbox"/> Social media (Facebook, Twitter, Instagram, etc.)      | <input type="checkbox"/> Hunting or wildlife magazines  |
| <input type="checkbox"/> Online videos  | <input type="checkbox"/> I have not used any other resources.   |
|   | <input type="checkbox"/> Other, please specify:   |
- 

**3. Which of the following best describes why you use social media for wild pig hunting content?**

Please select only one.

- |  |  |
|--|--|
| <input type="radio"/> To learn new hunting techniques  | <input type="radio"/> To learn about wild pigs           |
| <input type="radio"/> To get ideas about where to hunt | <input type="radio"/> To be entertained                  |
| <input type="radio"/> To watch wild pigs get harvested | <input type="radio"/> To remind me of my memorable hunts |

**If you do not watch wild pig hunting videos, please skip to question number 4.**

**4. What resources would you trust to learn about methods to manage or control wild pigs?**

Please select all that apply.

- |   |   |
|---|---|
| <input type="checkbox"/> Communication with state wildlife professionals (TPWD) | <input type="checkbox"/> Communication with federal wildlife professionals (APHIS, USDA, USFWS, etc.) |
| <input type="checkbox"/> Communication with AgriLife Extension agents           | <input type="checkbox"/> Communication with other hunters, landowners, farmers, or ranchers           |
| <input type="checkbox"/> Educational seminars                                   | <input type="checkbox"/> Articles or publications   |
| <input type="checkbox"/> Local newspaper or news broadcast                      | <input type="checkbox"/> Hunting or wildlife magazines  |
| <input type="checkbox"/> Social media (Facebook, Twitter, Instagram, etc.)      | <input type="checkbox"/> None   |
| <input type="checkbox"/> Online videos  | <input type="checkbox"/> Other, please specify:   |
-

**Section 8: Demographic Information**

To help us better understand how to share educational information and knowledge on wild pigs in the future, please answer the following questions about yourself.

**1. What is your ZIP code of primary residence?**

Please enter your 5-digit ZIP code, such as "77843"

**2. In what year were you born?**

Please enter your 4-digit birth year, such as "1965"

**3. What is your gender?**

- Male       Female

**4. What is the highest level of education you have obtained?**

- |   |   |
|---|---|
| <input type="radio"/> Did not graduate high school or receive GED | <input type="radio"/> Trade/technical/vocational training |
| <input type="radio"/> High school graduate, diploma or GED        | <input type="radio"/> Bachelor's degree                   |
| <input type="radio"/> Some college, no degree                     | <input type="radio"/> Master's degree                     |
| <input type="radio"/> Associate degree                            | <input type="radio"/> Doctoral degree                     |

**5. Please specify your ethnicity.**

- |  |   |
|--|---|
| <input type="radio"/> White                            | <input type="radio"/> Asian                               |
| <input type="radio"/> Black or African American        | <input type="radio"/> Native Hawaiian or Pacific Islander |
| <input type="radio"/> American Indian or Alaska Native | <input type="radio"/> Other                               |
| <input type="radio"/> Spanish, Hispanic, or Latino     |   |

**6. Please indicate your average household income.**

- |  |  |
|--|--|
| <input type="radio"/> Less than \$20,000   | <input type="radio"/> \$50,000 to \$74,999 |
| <input type="radio"/> \$20,000 to \$34,999 | <input type="radio"/> \$75,000 to \$99,999 |
| <input type="radio"/> \$35,000 to \$49,999 | <input type="radio"/> Over \$100,000       |

7. From the list below, please select all of the wildlife, environmental, or agricultural interest groups of which you are a member.

- |  |   |
|--|---|
| <input type="checkbox"/> Texas Farm Bureau                                 | <input type="checkbox"/> Texas Corn Producers   |
| <input type="checkbox"/> Texas and Southwestern Cattle Raisers Association | <input type="checkbox"/> Texas Cotton Association   |
| <input type="checkbox"/> Texas Sheep and Goat Raisers Association          | <input type="checkbox"/> Texas Pecan Growers Association  |
| <input type="checkbox"/> Texas Pork Producers                              | <input type="checkbox"/> Texas Forestry Association   |
| <input type="checkbox"/> Texas Hog Hunters' Association                    | <input type="checkbox"/> Texas Trophy Hunters Association   |
| <input type="checkbox"/> Quail Forever                                     | <input type="checkbox"/> Pheasants Forever  |
| <input type="checkbox"/> Ducks Unlimited                                   | <input type="checkbox"/> National Turkey Federation (Texas Chapter)                                   |
| <input type="checkbox"/> Exotic Wildlife Association                       | <input type="checkbox"/> Texas Deer Association   |
| <input type="checkbox"/> Texas Wildlife Association                        | <input type="checkbox"/> Texas Dove Hunters Association   |
| <input type="checkbox"/> Dallas Safari Club                                | <input type="checkbox"/> Houston Safari Club  |
| <input type="checkbox"/> Audubon Society                                   | <input type="checkbox"/> Lone Star Chapter of the Sierra Club   |
| <input type="checkbox"/> Texas Ornithological Society                      | <input type="checkbox"/> Texas Master Gardeners   |
| <input type="checkbox"/> Texas Master Naturalists                          | <input type="checkbox"/> Native Prairies Association of Texas   |
| <input type="checkbox"/> Native Plant Society of Texas                     | <input type="checkbox"/> Big Thicket Association  |
| <input type="checkbox"/> The Nature Conservancy                            | <input type="checkbox"/> Environment Texas  |
| <input type="checkbox"/> Texas Land Conservancy                            | <input type="checkbox"/> I am not a member of any of wildlife, environmental, or agricultural groups. |
|  | <input type="checkbox"/> Other, please specify  |

8. If you have any comments you would like to leave about this survey, please write them here.




Thank you for completing our survey!

We appreciate your time and contributions to our research.

Please return this questionnaire in the enclosed postage-paid envelope.

Should you have any questions or comments regarding this survey, please contact Rachael Connally by email at [rachael.connally@tamu.edu](mailto:rachael.connally@tamu.edu) or by phone at 979-583-2205.

Thanks again,

*John M. Tomeček*

**John M. Tomeček, Ph.D.**  
Principal Investigator  
Assistant Professor &  
Extension Wildlife Specialist

*Maureen G. Frank*

**Maureen G. Frank, Ph.D.**  
Co-Investigator  
Assistant Professor &  
Extension Wildlife Specialist

*Rachael L. Connally*

**Rachael L. Connally**  
Graduate Research Assistant

APPENDIX B: CHARACTERIZATION CODEBOOK

Parent characterization	Child characterization	Categories	Description	Relevant rules
Channel overview	ChannelType	individual hunter, hunting group/organization, non-hunting organization/group showing a member hunting, non-hunting related media company producing for hunters, unsure	The type of entity posting the video based on channel information and video content.	If entity posting the video is not apparent through user's channel profile/pictures, check video content, video description, other social media sites, or related website. If still unsure, enter 'unsure'
	ChannelComVideo	yes, no, unsure	Video is posted with a commercial intent - one that has prepared, done, or acted with sole or chief emphasis on salability, profit, or success of hunting/outfitting services, hunting/firearms equipment, wild pig meat, etc.	If it isn't apparent through the user's channel profile or video description, look for key words and phrases in video, video description, other social media sites, or related website. If still unsure enter 'unsure'
	ChannelComEntity	put down entities' name(s) or not applicable	The name of the commercial entity(s) that is driving/supporting the people in the video/the video	If the video is posted without commercial intent (said no to ChannelComVideo), enter 'not applicable'
Channel demographics	ChannelAge	all child, all adolescent, all adult, adolescent/adult,	Video is posted by a child, an adolescent, a	If individual or group age is not apparent through user's channel

		child/adolescent/ adult, unsure	young adult, or a mature adult	profile/pictures, check video content, video description, other social media sites, or related website. If still unsure, enter 'unsure'.
	ChannelGender	male, female, male/female, unsure	Video is posted by a male or female	If individual or group gender is not apparent through user's channel profile/pictures, check video content, video description, other social media sites, or related website. If still unsure, enter 'unsure'.
	ChannelLocation	state code (ex. FL, TX, SC, etc.), unsure	The state the user is from	If it isn't apparent through the user's channel profile, check video content, video description, other social media sites, or related website. If still unsure enter 'unsure'
Video information	VideoHighlight	hunting, field dressing, butchering, cooking, hunting/field dressing, hunting/butcherin g, hunting/cooking, field dressing/butcheri ng, field	What the video highlights in regards to scenes that show wild pig hunting (act of animal being pursued and/or killed), field dressing, butchering, and cooking activities	Only enter what the video highlights in terms of wild pigs - Disregard entering any code scheme that highlights hunting, field dressing, butchering, or cooking scenes of

		dressing/cooking, butchering/cooking		other animals. Can enter more than one VideoHighlight.
Video demographics	VideoAge	all child, all adolescent, all adult, adolescent/adult, child/adolescent/adult, unsure	The age distribution of the individuals in the video	If it isn't apparent through video title and video description, look in video content. If still unsure, enter 'unsure'
	VideoGender	all male, all female, male/female, unsure	The gender distribution of the individuals in the video	If it isn't apparent through video title and video description, look in video content. If still unsure, enter 'unsure'
	VideoLocation	state abbreviation (ex. FL, TX, SC, etc.), unsure	The state where the video takes place	If it isn't apparent through video title and video description, look in video content. If still unsure, enter 'unsure'
	VideoNumPeople	x, >20	The number of people in the video including camera person	If there are too many to count, enter >20
Hunting strategies	HuntMethods	spot and stalk, tree stand, blind, use of dogs, aerial hunting, trapping, baiting, use of drone, absent, not applicable	Type of method seen being taken or communicated about to hunt wild pigs.	If no hunting scenes are shown and no one communicates what hunting methods were used, enter 'absent'. Can enter more than one hunting method. If no pigs are killed in the video, enter 'not applicable.'

	WeaponsUsed	rifle, handgun, air gun, compound bow, recurve bow, crossbow, spear, knife, sword, explosives, cannon, absent, not applicable	Type of weapons seen being used or communicated about to hunt wild pigs.	If no hunting scenes are shown and no one communicates what weapons were used, enter 'absent'. Can enter more than one weapon used. If no pigs were killed in the video, enter 'not applicable'
	HuntingDiffSpecies	yes, no, unsure	Any person(s) in the video is seen or communicates about hunting other species of animal besides wild pigs while actively hunting wild pigs.	If no hunting scenes are shown and no one communicates that other species were also hunted, enter 'unsure'.
	DiffSpeciesHunted	squirrel, coyote, deer, elk, etc., not applicable	Species of animal that was also hunted	If answered no to HuntingDiffSpecies enter 'not applicable'. Can enter more than one species.
	TimeOfHunt	daytime, nighttime, daytime/nighttime, absent	Time of day wild pig hunting is seen taking place or is communicated about.	If no hunting scenes are shown and no one communicates what time of day hunting took place, enter 'absent'. Disregard time of hunt that is shown of other animals.
Best practices and disease risks	WearPropGloves	everyone, some people, no one, absent, not applicable	Number of person(s) in video is seen wearing disposable gloves or rubber	If behavior is not clearly present in video enter 'absent'. If no scenes are shown where people are

			gloves when touching/handling pigs that are dead or alive	touching dead or alive pigs enter 'not applicable'
	WearSafetyEye	everyone, some people, no one, absent, not applicable	Number of person(s) in video are seen wearing safety glasses/goggles, glasses, or sunglasses when touching/handling pigs that are dead or alive	If behavior is not clearly present in video enter 'absent'. If no scenes are shown where people are touching dead or alive pigs enter 'not applicable'
	EatDrink	everyone, some people, no one, absent, not applicable	Number of person(s) in video is seen eating, drinking, smoking, or dipping when touching/handling pigs that are dead or alive	If behavior is not clearly present in video enter 'absent'. If no scenes are shown where people are touching dead or alive pigs enter 'not applicable'
	WashHands	everyone, some people, no one, absent, not applicable	Number of person(s) in video is seen washing hands when touching/handling pigs that are dead or alive	If behavior is not clearly present in video enter 'absent'. If no scenes are shown where people are touching dead or alive pigs enter 'not applicable'
	CleanSurfaces	yes, absent, not applicable	Surfaces are seen being cleaned during, before, or after field dressing/butchering	If behavior is not clearly present in video enter 'absent'. If no field dressing or butchering scenes are shown enter 'not applicable'
	CleanTools	yes, absent, not applicable	Tools (ex. knives) are seen being cleaned during, before, or after field	If behavior is not clearly present in video enter 'absent'. If no field dressing or butchering scenes

			dressing/butchering	are shown enter 'not applicable'
	MeatSeperate	yes, absent, not applicable	Raw meat is kept separate from cooked meat and other foods before, during, or after field dressing/butchering	If behavior is not clearly present in video enter 'absent'. If no field dressing or butchering scenes are shown enter 'not applicable'
	ChillMeat	yes, absent, not applicable	Raw or cooked meat is seen removed from ice, kept on ice, or is put on ice before, during, or after field dressing/butchering	If behavior is not clearly present in video enter 'absent'. If no field dressing or butchering scenes are shown enter 'not applicable'
	PetsNearCarcass	yes, absent, not applicable, unsure	Pets (including dog, cats, etc.) are seen sniffing, touching, licking carcasses, etc.	If behavior is not clearly present in video enter 'absent'. If no pets were seen in video enter 'not applicable'
	PetsEatMeat	yes, absent, not applicable, unsure	Pets (including dogs, cats, etc.) are seen consuming blood, meat, other bodily parts of wild pigs	If behavior is not clearly present in video enter 'absent'. If no pets were seen in video enter 'not applicable'

APPENDIX C: THEMATIC CODEBOOK

Parent Theme	Child Theme	Description
Concern about disease	DiseaseHumans	Any person in video communicates that they are concerned about feral swine transmitting diseases to humans
	DiseaseLivestock	Any person in video communicates that they are concerned about feral swine transmitting diseases to livestock
	DiseasePets	Any person in video communicates that they are concerned about feral swine transmitting diseases to pets
	DiseaseWildlife	Any person in video communicates that they are concerned about feral swine transmitting diseases to other wildlife
Concern about damage	DamCrops	Any person in video communicates that they are concerned about feral swine damaging agricultural crops
	DamLivestock	Any person in video communicates that they are concerned about feral swine damaging livestock
	DamProperty	Any person in video communicates that they are concerned about feral swine damaging personal property
	DamEnvironment	Any person in video communicates that they are concerned about feral swine damaging the environment
	DamWildlife	Any person in video communicates that they are concerned about feral swine damaging other wildlife
Concern about injury	InjureHumans	Any person in video communicates that they are concerned about feral swine physically hurting humans
	InjurePets	Any person in video communicates that they are concerned about feral swine physically hurting pets
Best practices to mitigate disease risks	ChillMeat	Any person in video communicates that raw or cooked meat should be kept on ice
	SharpKnives	Person field dressing/butchering communicates that a sharp knife is being used
	CookMeat	Any person in video communicates that the meat should be cooked to high enough internal temperature



	WearPPE	Any person in video communicates that people should wear any type of personal protective equipment when handling dead or alive wild pigs, including but not limited to, gloves, eyewear, and facemasks.
Motivation for hunting	Socialization/recreation	Any person communicates their motivation behind hunting wild pigs is because they want to be with friends/family, it is fun, they want to be in nature, etc.
	Tradition	Any person communicates their motivation behind hunting wild pigs is because it is a part of tradition, who they are, the 'experience.'
	Trophy	Any person communicates their motivation behind hunting wild pigs is because they want to get a big pig/trophy.
	Meat	Any person communicates their motivation behind hunting wild pigs is because they want to get meat.
	Test hunting gear	Any person communicates their motivation behind hunting wild pigs is because they want to test/try any type of hunting gear/equipment
	Competition	Any person communicates their motivation behind hunting wild pigs is because they are in a competition to kill the most hogs, etc.
	Control wild pig numbers	Any person communicates their motivation behind hunting wild pigs is to reduce the numbers of wild pigs.
	Control wild pig damage	Any person communicates their motivation behind hunting wild pigs is to control wild pig damage
Sentiment	PosTonePigsDead	Any person in video communicates that they have a positive sentiment, view, attitude, or opinion towards dead wild pigs
	NegTonePigsDead	Any person in video communicates that they have a negative sentiment, view, attitude, or opinion towards dead wild pigs
	PosTonePigsAlive	Any person in video communicates that they have a positive sentiment, view, attitude, or opinion towards alive wild pigs
	NegTonePigsAlive	Any person in video communicates that they have a negative sentiment, view, attitude, or opinion towards alive wild pigs
	PosTonePigHunting	Any person in video communicates that they have a positive sentiment, view, attitude, or opinion towards <i>hunting</i> wild pigs

	NegTonePigHunting	Any person in video communicates that they have a negative sentiment, view, attitude, or opinion towards <i>hunting</i> wild pigs
	PosToneEating	Any person in video communicates that they have a positive sentiment, view, attitude, or opinion towards <i>eating or cooking wild pig meat</i>
	NegToneEating	Any person in video communicates that they have a negative sentiment, view, attitude, or opinion towards <i>eating or cooking wild pig meat</i>
Brand-name equipment	Brand-name equipment used to kill wild pigs	Any person communicates about the brand-name equipment used in the video to kill (or attempt to kill) wild pigs, including firearms, firearm attachments, bows, air guns, cannons, ammunition, etc.
	All other brand-name equipment used	Any person communicates about any other brand-name equipment used in the video including, hunting gear, outdoor gear, cooking utensils, etc.
Companies	-	Any person communicates about the companies used or sponsored by including, hunting ranches, hunting guide services, production companies, firearm companies, other gear companies, management companies, research institutions, etc.
Hunting laws & regulations	-	Any person communicates about any hunting laws &/or regulations related to wild pigs - accurate or not.
Hunting rights	-	Any person communicates about their rights to hunt - accurate or not.
Ethical hunting	-	Any person communicates about ethical hunting, needing to properly place a bullet to kill a hog, how best to kill a hog, etc. - accurate or not.
Wild pig biology/ecology	-	Any person communicates about wild pig biology &/or ecology - accurate or not.