

A QUALITATIVE STUDY OF MASS MEDIA REPORTS ABOUT HONEY BEE

DECLINE AND BEEKEEPER PRACTICES

A Dissertation

by

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ABSTRACT

The purpose of this study was to investigate the effects of mass media reports about honey bee decline on the practices of small-scale beekeepers. To accomplish this, the researcher conducted a three-component qualitative investigation. The first component was a content analysis of mass media reports about honey bee decline. The second component was an interpretive qualitative study of beekeepers. The third component compared the results of the component one content analysis to the component two interviews with beekeepers. The comparison attempted to identify common or divergent themes related to beekeeping practices and media coverage of honey bee decline.

The mass media reports used in this study were collected over a three-month period. They included television, radio, and print stories that were aggregated through Google News Alerts using the search words honey bee decline, colony collapse disorder, Africanized bees, and killer bees. Additionally, semi-structured interviews were conducted with small-scale beekeepers in Texas to learn more about their lives, and their experiences with managing hives. The intentional selection of small-scale beekeepers, rather than commercial beekeepers, allowed the researcher to narrow the study to those who pursued beekeeping as a hobby and not as a business.

The findings revealed that many of the attitudes reflected in the beekeeper interviews were congruent with information reported through mass media on issues ranging from honey bee decline to conservancy of the environment. The beekeepers

were enthusiastic about caring for their bees and maintaining their pastures and gardens. They were also concerned about the phenomenon of honey bee decline, even if they hadn't yet experienced the malady in their own hives.

Many of the beekeepers interviewed in this study indicated lack of trust in the media. They used words including "liberal," "emotional," "biased," "hype," and "does not get that granular," when describing mass media and media reporting. Alternatively, many beekeepers interviewed in this study said that YouTube and the Internet were their preferred sources for beekeeping information. Among those interviewed, bee associations and bee schools were also highly ranked as origins of information.

DEDICATION

This dissertation is dedicated to my family. Thank you, Cathy, for your love, patience, counsel, and support. It's time to start planning a needed vacation together. Thank you, Rachel, Carolyn, and Levi, for your encouragement and for helping mom when I was away on campus. I couldn't have done this without each of you. Thank you, mother, and dad, for teaching me the value of hard work. Dad – we all miss you.

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NOMENCLATURE

CCD	Colony Collapse Disorder
ICT	Information Communication Tools
IRB	Institutional Review Board
HLSR	Houston Livestock Show and Rodeo
MCD	Mad Cow Disease
MRSA	Methicillin-resistant Staphylococcus Aureus
SARS	Severe Acute Respiratory Syndrome
TRA	Theory of Reasoned Action

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CHAPTER I

INTRODUCTION

Pollinator welfare is, without question, an issue of concern for consumers and stakeholders around the world. The health of honey bees and other pollinators, and their contributions to crop survival are critical to the survival of agriculture as we know it. The media has reported extensively on honey bee decline and the potential threat to our food supply. “Indeed, in the last few years, the world’s press has been full of eye-catching but often-uninformative headlines proclaiming the dramatic demise of the honey bee, a world pollinator crisis and the spectre of mass human starvation” (Neumann & Carreck, 2010, p. 44).

Research has shown that media messages have an influence on audiences. According to Bandura (2010) “In some instances, the media both teach new forms of behavior and create motivators for action by altering people’s value preferences, efficacy beliefs, outcome expectations, and perception of opportunity structures” (p. 286). Human behavior can affect social problems “in a variety of domains,” including health, safety, and the environment (Fishbein & Ajzen, 2010, p. 1).

Mass media channels transmit messages through mediums including radio, television and newspapers, making it possible for sources to connect with large audiences (Rogers, 2003, p. 18). Moreover, the mass media can “reach a large audience rapidly”, “create knowledge and spread information,” and “change weakly held

attitudes” (Rogers, 2003, p. 205). How the public interprets the day’s events can be influenced by the news media (Berry et al., 2007, p. 35).

Journalists are taught the importance of values including objectivity and truthfulness, and to “respect the integrity of facts” (Harrower, 2010, p. 36). “Therefore, media should act with responsibility, report the truth, and keep their reports objective and fair” (Park & Sohn, 2013, p. 207). Unfortunately, there are shortcomings. The potential for misrepresenting a situation is heightened when the news media doesn’t have the facts (Crandall et al., 2010, p. 160).

Statement of the Problem

“Misrepresentation of scientific knowledge in the media” occurs across a wide variety of environmental issues, including global warming and honey bee decline, creating confusion among the public (Cho, 2010, p. 2). Equitable dissemination of information to the public is essential because an issue like colony collapse disorder (CCD) is complex and it has an impact on stakeholders (Boehm, 2012, p. 3).

Honey bee decline, commonly referred to as CCD, is a phenomena in which worker bees suddenly and mysteriously disappear from hives. According to Stankus (2014), CCD poses a threat to honey production, and more importantly, to the crops that depend on bees for pollination (p. 228). The state of Texas was ranked sixth in the nation for honey production in 2019 and is a home for thousands of overwintering hives that serve the nation’s agricultural economy (Texas A&M AgriLife Research, 2020, as cited in Russell, 2020). “The plight of the honey bee and beekeeping to protect populations is

a part of the increasing trend of hobbyist beekeepers” (Keck, 2020, as cited in Russell, 2020). According to Keck, (as cited in Russell, 2020), around 75 percent of residents who participate in the Texas A&M AgriLife Extension Service Beekeeping 101 course are pursuing an agricultural exemption and harvesting honey to share with family and friends, and possibly sell at local farmers markets. There are approximately 55 local beekeeper associations in Texas affiliated with the Texas Beekeepers Association (Texas Beekeepers Association, n.d.). The local associations are important, as they provide forums for beekeepers to meet and talk about the latest in beekeeping practices and innovations. The associations also provide educational opportunities for new beekeepers.

Purpose

Cho (2010, p. 13) found that while the primary goal of most CCD research was to narrow efforts to identify the cause of CCD, the media leaned toward an emphasis on recommending practical solutions to prevent a decline in bee populations. Regrettably, there is a lack of social science research that links the effect of media reports to the practices of beekeepers and the solutions beekeepers have adopted to confront the phenomenon of honey bee decline.

If honey bee biologists, extension professionals, journalists, and other stakeholders have a better understanding of how communications affect the practices of beekeepers, it is reasonable to presume that future communications can be shaped to better serve the needs and interests of beekeepers. Therefore, the purpose of this study

will be to investigate the effects of media reports about honey bee decline on the practices of small-scale beekeepers.

Research Questions

To guide the study, the researcher developed the following research questions:

- 1) How does the mass media portray honey bee decline in its coverage of the subject?
- 2) What are the factors that influence small-scale beekeeping practices?
- 3) Are there common or divergent themes related to small-scale beekeeping practices and mass media coverage of honey bee decline?

Delimitations

The boundaries established by the researcher included the delimitation of respondents to a sample of small-scale or hobby beekeepers residing in the state of Texas. The selection of small-scale beekeepers, rather than commercial beekeepers, provided a sample whose practices were not likely to be leveraged by economic drivers. The sample is also representative of an increasing trend in Texas toward hobby beekeeping for the purpose of protecting honey bee populations.

Limitations

Due to the COVID-19 pandemic and the need for maintenance of social distancing, a total of ten of the semi-structured respondent interviews were accomplished

through phone calls. Only two of the interviews were conducted face-to-face prior to the onset of the pandemic. The researcher would have preferred otherwise - that all interviews be conducted using face to face interaction. In research on virtual qualitative studies, Roberts et al. (2021) found unique challenges and opportunities for safeguarding a rigorous and equitable research process (p. 10). Iacono et al. (2016) suggested that in-person interviews should not be completely replaced with use of technologies such as Skype, but instead be considered as a “complimentary data collection tool” by qualitative researchers (p. 10).

Definition of Terms

Honey Bee Decline. a phenomenon in which worker bees suddenly and mysteriously disappear from hives; commonly referred to as CCD (colony collapse disorder).

Mass Media. Television, radio, magazines, and newspapers

Small-Scale Beekeepers. beekeepers who maintain less than 50 colonies; also referred to as backyard or hobby beekeepers.

CHAPTER II

LITERATURE REVIEW

The spate of recent news reports about honey bee decline prompted the researcher to believe that media communications may indeed have an impact on the practices of beekeepers. A review of literature associated with honey bee decline and media coverage about the topic offers enlightening perspectives. Further context comes from literature specifically associated with media reporting about methicillin-resistant *Staphylococcus aureus* (MRSA), Severe Acute Respiratory Syndrome (SARS), Mad Cow Disease (MCD), and global warming. Additional points of view are provided in literature related to social science and the honey bee, and societal views of the Africanized honey bee.

A brief overview of the research on predicting and changing behavior by Martin Fishbein and Icek Ajzen (2010) offers a framework for understanding how mass media reporting on honey bee decline may affect beekeeper practices. Fishbein's and Ajzen's (2010) Reasoned Action Approach seeks to construct explanations for intent and behavior that are based on "attitude toward the behavior, perceived norm, and perception of behavioral control" (p. 21).

Honey Bee Decline

Approximately one-third of our food supply depends upon insect pollinators (Kielmanowicz et al., 2015, p. 1). Pollination is the "most important contribution honey

bees make to modern agriculture” (vanEngelsdorp & Meixner, 2010, p. 80).

Unfortunately, honey bee colony disorders pose a threat to honey production and to the crops that depend on bees for pollination. Furthermore, significant concerns exist about managed honey bee colony declines and the fate of pollinator populations around the world (Smith, et al., 2013, p. 434). According to Caron and Connor (2013) “good beekeeping requires maintenance of healthy, disease-, pest-, and pesticide-free bees” (p. 331).

The phenomenon of worker bees disappearing has happened throughout the history of beekeeping (Central Texas Beekeepers School, 2015, p. 17). In 1906, beekeepers on the Isle of Wight, near the south coast of England, witnessed the decline of many of their hives and attributed the losses to an infectious disease (Neumann & Carreck, 2010, p. 44).

In 2006, the National Research Council reported on the appearance of a phenomenon called colony collapse disorder (CCD), which entailed the disappearance of adult bees from hives, leaving colonies weak and vulnerable to disease (Boehm, 2012, p. 1). “Environmental scientists and agriculturalists have developed many different theories about CCD and its origins” (Boehm, 2012, p. 1). According to Neumann and Carreck (2010), concerns about CCD have “much in common” with the infectious disease originally witnessed in 1906 on the Isle of Wight. (p. 45).

According to Watanabe (2008), something comparable to CCD is occurring with honey bee colonies in Europe and the Middle East (p. 388). Over the last decade, there appears to have been substantial declines in the health of managed and wild honey bee

colonies in Europe and the United States (Becher et al., 2013, p. 868). Many factors may be involved in the declines, but “in all likelihood, no one factor on its own can account for all losses or gains over a given time period” (vanEngelsdorp & Meixner, 2010, p. 83). The causes that account for the imperilment of honey bees “are assumed to be multi-faceted” (Lorenz & Stark, 2015, p. 116). In the literature, a consensus has emerged that CCD “will probably never be limited to a single agent or factor” (Stankus, 2014, p. 249). According to vanEngelsdorp and Meixner (2010), “managed honey bee populations are influenced by many factors including diseases, parasites, pesticides, the environment, and socio-economic factors” (p. 80). An increasing demand for pollination of monoculture crop systems and cross-country transport of bee colonies have heightened stress factors (Spivak et al., 2011, p. 35).

Although many environmental and anthropogenic factors remain under investigation for their role in annual honey bee colony losses, the introduction of pests and pathogens, and large-scale shifts in management practices may be significant, under-researched drivers of colony losses in Europe and North America. (Smith et al., 2013, p. 434)

Media Coverage of Honey Bee Decline

“Over time, the US news media have evolved into a powerful actor in the production, exchange, and dissemination of ideas within and between the science, policy and public spheres” (Boykoff, & Boykoff, 2007, p. 1201). Spivak et al. (2011), wrote,

“the story of vanishing honey bees has become ubiquitous in popular consciousness” (p. 34).

With respect to media coverage, much attention has been paid to problems associated with pollinator decline and CCD. News outlets report frequently on the topic. Unfortunately, there is scant academic literature with substantive information about media treatment of pollinator and honey bee decline.

In one of the very few studies on media reporting about honey bee decline, Cho (2010) investigated the evolution of CCD’s portrayal in media and scientific journals over time. Cho (2010) found that misrepresentations of CCD in the media are like previous reporting about environmental issues such as global warming (p. 14).

“Uncertainty in the public is created not only because of discrepancies through exaggerated reporting, but also the disagreement among scientists” (Cho, 2010, p. 14). In a case study, Cho (2010) reviewed 61 scientific journals and 47 newspaper articles that noted perceived causes of CCD, how the focus of possible causes developed over time, and what impacts are communicated in both the journal articles and newspaper reports. The study included scientific journal articles and media articles that were written between 2007 and 2010.

In a content analysis of news stories in Austrian newspapers, Huber and Aichberger (2019) found that “media coverage of honey bee colony losses was highly emotionalized” across the three time periods that were the focus of the study (p. 146).

In a study of Australian media, Smith and Saunders (2016) suggested there is bias toward European honey bees, notwithstanding increased attention toward wild

pollinator conservation and public awareness of pollination services (p. 388). Moreover, media organizations play an important role in creating communication pathways, and the repercussions of misinformation on environmental issues need to be understood by scientists, journalists, and media audiences (Smith & Saunders, 2016, p. 388). Communication pathways may not always be available. Althaus et al., (2020) found that occasional high-profile scientific reports have difficulty attracting attention from mainstream media for slower moving problems like pollinator decline (p. 7).

MRSA, SARS, MCD and Global Warming

Additional perspectives about media impacts on audience attitudes can be gained by reviewing literature associated with media reporting on MRSA, SARS, MCD, and global warming. Comparisons might then be drawn with media reporting about the phenomenon of pollinator decline.

Lee and Chyi (2014) suggested that there is limited knowledge of why people consume news. “Despite the rise of the Internet, cable television, and mobile devices, news consumption remains relatively shallow among the general American public” (Lee & Chyi, 2014, p. 707). According to Lee and Chyi (2014), news beliefs are positively influenced by age and education. (p. 714).

In a study that examined United Kingdom newspaper reports about MRSA during a 10-year period up to 2005, Washer et al., (2008) suggested that “traces of pre-scientific understandings of germs and contagion” are imbedded in culture along with “a

framework of scientific understandings of MRSA,” even though not all the ideas that are shared come from newspaper reporting about the issue (p. 47).

In 2003, SARS spread rapidly from China to infect victims in countries around the world. In a paper that examined risk perception and communication and the role of the media during the SARS outbreak, Smith (2006) wrote that there is an absence of information concerning the part of the media in raising public awareness (p. 3117). Smith (2006) noted however, that an important factor in expediting the response to SARS was modern technology and globalization in media and communications (p. 3119).

In a study about the influence of media communication on behavior related to MCD in South Korea, Park and Sohn (2013) found that media reports, along with knowledge and attitude of MCD, influence risk behavior (p. 207). Park and Sohn (2013) recommended that media should act responsibly, report truthfully, and provide balanced reports that take many viewpoints into account (p. 207).

In an investigation of mass communication and public understanding of environmental problems, Stamm et al., (2000) found that the use of mass media was undoubtedly associated with public comprehension of the relationship between fossil fuel consumption and climate change (p. 234). Moreover, communication behavior was associated with support for fundamental solutions including “driving less, reducing home energy use, and using more energy-efficient technology” (Stamm et al., 2000, p. 234).

The media have the power to sway public perception of health issues by choosing what to publish and the context in which to present information. The media may influence an individual's tendency to overestimate the risk of some health issues while underestimating the risk of others, ultimately influencing health choices. (Berry et al., 2007, p. 35)

Novacek (2008) suggested that news media may “discourage public interest in environmental topics by characterizing the science behind them as overly complex, immersed in debate and controversy, and detached from human interests” (p. 11575).

An important strategy for raising the newsworthiness of the biodiversity issue and helping to ensure its accurate portrayal is ultimately educational. This means providing opportunities for journalists and reporters to encounter more translated versions of scientific stories or to convene as groups or individuals with scientists over an extended period. (Novacek, 2008, p. 11575)

New Media

Increasing dependence upon the Internet and other digital media cannot be overlooked when examining media preferences for receiving information. In an Australian study about providing pest and disease information using Information Communication Tools (ICT), Wright et al., (2018) found that growers and agronomists have favorable attitudes toward “use of webinars, YouTube videos, and podcasts produced during the growing season” (p. 28). Furthermore, ICT tools “provide information immediately, are easily accessed and are user friendly for all” (Wright et al.,

2018, p. 28). Social media outlets, including Facebook, Twitter, and YouTube are important tools for communication in the agriculture community (Bradley, 2012, p. 38).

A study about the role of journalism on YouTube revealed that numerous pathways to YouTube videos, whether through content shared by friends, YouTube recommendation, or links from other websites, provided “an important blending of journalistic content and popular science content about important societal issues” (Djerf-Pierre et al., 2019, p. 245). According to Horan (2020), consumers on YouTube can opt to view “what they want” and “as often as they want,” highlighting the increased flexibility they have in comparison to traditional media (p. 148).

Reliance upon ICT may not be a panacea though. In an article about urban beekeeping, Burnham (2012) worried that “relying too much on easy online investigating stops us from acting like the social animals for which we are trying to care” (p. 47). Burnham (2012) said it was “pounded home ... that all beekeeping is local, and that this is a kind of learning that cannot be done only from a desk chair” (p. 47).

Social Science and the Honey Bee

In a case study about urban beekeeping in Berlin, Germany, Lorenz and Stark (2015) noted that there is growing interest in beekeeping, particularly in metropolitan areas. “What is more, beekeeping has particularly been discovered as an ecologically inspired urban lifestyle phenomenon” (Lorenz & Stark, 2015, p. 119). Lorenz and Stark (2015) observed that more scrutiny has been given to honey bees and beekeeping by the media and in public forums, due to the portrayal of honey bees as pollinators and the

fashioning of bee decline as an issue for food production (p. 118). Furthermore, Lorenz and Stark (2015) suggested that “public interest in beekeeping has been fueled by a range of media contributions on the topic” (p. 119).

Lorenz (2013) advanced the idea that there is an “interdependency” between humans and bees, which was not noticed until significant honey bee declines took place. Lorenz (2013) suggested that studies should be centered around the harmonious interaction between humans and bees” (p. 2).

If there is interdependency between humans and bees, as Lorenz suggested, the researcher believes it would be helpful to understand more about the human behavior side of the equation and whether beekeeping practices are affected by media reporting on pollinators and honey bee decline.

Societal Views of the Africanized Honey Bee

In a study focusing on rhetorical constructs of the threat of the Africanized honey bee, Howe (2013) investigated different forms of media for their portrayals of the bee, including children’s books (p. 127). “In many of these texts, there is a fine line between education and entertainment, although generally the trend is for the former to eventually emerge from the shadow of the latter” (Howe, 2013, p. 127). According to Flakus (1993) the bee has been characterized in science fiction movies as a threat to our lives, property, and way of life (p. 3).

“What has earned the Africanized bees the undeserved notoriety as killer bees is their extreme aggressiveness, which everyone agrees is objectionable” (Camazine & Morse, 1988, p. 465).

In spite of their objectionable traits, the Africanized honey bee has some redeeming qualities. According to Dietemann (2015) “the most damaging honey bee parasite, the well-named mite *Varroa destructor*, does not show the same long term devastating effect on some African honey bee populations” (p. 4). In Costa Rica, where Africanized honey bees have influenced local honey bee populations, experienced beekeepers have adapted and found the bees to be “excellent honey producers” (Gabric, 2017, p. 3).

The researcher thought it was relevant to include respondent interview questions and search for media reports about Africanized bees in this study because of the potential impact of Africanized bees on beekeeping practices in the state of Texas.

Theoretical Framework

“Basically, we assume that human social behavior follows reasonably and often spontaneously from the information or beliefs people possess about the behavior under consideration” (Fishbein & Ajzen, 2010, p. 20). According to Fishbein and Ajzen (2010), the beliefs originate from sources, which may include “personal experiences, formal education, radio, newspapers, TV, the Internet and other media, and interactions with family and friends” (p. 20).

The Reasoned Action Approach asserts that “intention is the best single predictor of behavior” but that it is also critical to consider skills, abilities, and environmental factors (Fishbein and Ajzen, 2010, p. 21). Fishbein and Ajzen (2010) noted that intentions do not have to involve significant deliberation, but instead may come spontaneously from an underlying cognitive foundation of beliefs (p. 24).

The researcher did not test the Reasoned Action Approach theory in this study, but it did provide a frame for better understanding respondent behavior. In the context of the study, the interviews with respondents provided information about their personal experiences with beekeeping, their media consumption habits, and their interactions with bee clubs and organizations. As the theory posits, beliefs originate from sources such as these, intentions may come from these beliefs, and intention is a predictor of behavior.

Summary

This review of literature provided historical, contextual, and theoretical insight into the importance of understanding why and how media reports may affect beekeeper practices, pollinator health, and ultimately, agricultural sustainability. The literature reflects the global scale of honeybee decline, and a range of possible causes. We also see that media reporting may affect human behavior.

CHAPTER III

METHODOLOGY

The purpose of this study was to investigate the effects of media reports about honey bee decline on the practices of small-scale beekeepers in Texas. If honey bee biologists, journalists, and other stakeholders have a clearer understanding of how communications affect the practices of small-scale beekeepers, then future communications might be shaped to better serve the needs and interests of small-scale beekeepers.

Design

It was necessary to use a qualitative approach in this study because of the lack of relevant research and access to published data identifying hobby beekeepers in the state of Texas. This study consisted of three components. The first component was a content analysis of media reports about honey bee decline, and the second component was an interpretive study of beekeepers. The third component compared the results of the component one content analysis to the component two interviews to identify common or divergent themes related to beekeeping practices and media coverage of honey bee decline. The population for the study was limited to small-scale beekeepers, also referred to as backyard or hobby beekeepers, who maintain less than 50 colonies (Caron & Connor, 2013, p. 159) in Texas.

The first component of the study was a qualitative content analysis of mass media reports about honey bee decline. In a qualitative content analysis, “the communication of meaning is the focus” (Merriam, 2009, p. 205).

Only mass media reports were used in this study. The reports were collected online through Google News Alerts related to honey bee decline and Africanized bees. Search words included *honey bee decline*, *colony collapse disorder*, *Africanized bees*, and *killer bees*. The alerts that were documented were limited to those originating from mass media outlets, including TV, radio, magazines, and newspapers during a three-month period from April through June 2019. This window of time was selected by the researcher because it is when flowers are blooming, honey flows are occurring, and swarms are more frequent. The mass media reports were coded and analyzed by the researcher for trends that lead to further insight into media treatment of stories associated with honey bee decline. The coding entailed color highlighting and tabbing of text as categories emerged in the media reports. The process requires coding of raw data and creation of categories at the same time to capture important characteristics of the document’s content (Merriam, 2009, p. 205).

The second component of the study was an interpretive qualitative study of small-scale beekeepers. For this study, semi-structured interviews were conducted with small-scale beekeepers in Texas to learn more about their lives, and their experiences with managing hives. The overarching purpose for this type of research is to discern how individuals “make sense of their lives and their experiences” (Merriam, 2009, p. 23).

The sources for a data analysis may include “interviews, observations, documents, unobtrusive measures, nonverbal cues, or any other qualitative or quantitative information pools” (Lincoln & Guba, 1985, p. 202). In the “naturalistic paradigm,” knowledge and data should materialize as a result of the investigation (Lincoln & Guba, 1985, p. 203). Field data must be evaluated using an inductive approach to be able to explain local working hypotheses (Lincoln & Guba, 1985, p. 203).

The constant comparative method was also used for the component three analysis, which compared the component one content analysis to the component two interviews. Merriam (2009) suggested that the constant comparative strategy “is compatible with the inductive, concept-building orientation of all qualitative research” (p. 199). For the analysis, data is continually compared against other data. According to Merriam (2009), “comparisons are constantly made within and between levels of conceptualization,” until a substantive theory can be determined (p. 200).

Research Questions

The research questions for this study were a guide for the researcher. Three questions were posed.

- 1) How does the mass media portray honey bee decline in its coverage of the subject?
- 2) What are the factors that influence small-scale beekeeping practices in Texas?

- 3) Are there common or divergent themes related to small-scale beekeeping practices and mass media coverage of honey bee decline?

Sample

For the second component of the study, the selection of small-scale beekeepers, rather than commercial beekeepers, provided a sample whose practices were not as likely to be leveraged by economic drivers. Sampling of subjects was facilitated primarily by contacts made through the Texas A&M University Honey Bee Lab. The researcher believed it was relevant and appropriate to limit the sample to beekeepers from the state of Texas for this study because of the popularity of hobby beekeeping in Texas for the purpose of protecting honey bee populations. The researcher also selected Texas beekeepers due to the potential influence of the Africanized honey bee in the region. Only adult beekeepers were interviewed in this study.

Interviews

On Saturday, September 7, 2019 the researcher attended the Brazos Valley Beekeepers Association Fall Beekeeping School in College Station, Texas. The 2019 event was sponsored by the Texas A&M Honey Bee Lab. At the school, the researcher provided a sign-up sheet for adult beekeepers who might be interested in participating in the study. Three individuals signed up and one of those three later participated in an actual interview. Assurances for interviews with two more beekeepers were secured

elsewhere during the fall of 2019. Institutional Review Board (IRB) approval for the study was granted on October 31, 2019.

Interviews commenced on February 20, 2020 with the first occurring at a small restaurant in Dallas, Texas. A second beekeeper interview took place at a coffee shop in Huntsville, Texas on March 3, 2020. Soon thereafter, the ability to conduct face-to-face interviews was derailed by the onset of the COVID-19 pandemic. Social distancing requirements did not make it safe or practical to continue meeting face-to-face with beekeepers. The ability to meet with and identify potential subjects for this study at monthly bee meetings and annual schools was also curtailed by the pandemic, as almost all face-to-face gatherings had been canceled.

Permission was secured from the chair of the study's research committee to continue the interview process through telephone contacts. There were advantages to using the phone for interviews with the beekeepers, but, as Iacono et al. (2016) noted in a study on use of Skype as a qualitative research tool, "we lost a bit of the social contact and the energy from the other person" (p. 11). Likewise, the researcher missed the social contact and would have preferred continued face-to-face interviews to be able to observe such things as beekeeper body language and to see the environment that beekeepers operate in.

A third beekeeper, previously identified in the fall, was interviewed by phone on June 29, 2020. A solicitation placed on the Texas A&M Honey Bee Lab Facebook page allowed the researcher to identify the remaining number subjects needed for this study. Interviews with those beekeepers began on August 21, 2020 and continued in earnest

over a period of two weeks. A total of 12 beekeepers were interviewed. Saturation occurred at approximately the sixth interview when the researcher determined with certainty that he was hearing the same things repetitively.

Each of the beekeeper interviews started with the researcher reading an introductory statement about the study. General instructions for the interview were also provided and permission was secured for the researcher to record the interview. Each of the beekeepers who volunteered to participate in the study consented to have their interviews recorded. A total of 21 pre-selected questions were asked of each beekeeper. The questions were developed with the assistance of the study's research committee. The interviews were semi-structured in nature, as some of the conversations drifted from the pre-selected questions onto related topics. At the conclusion of each interview, the researcher conducted a short debriefing, asking if there was any other information that would be useful to know. The interviews lasted in duration anywhere from 30-minutes to one-hour in length. The beekeepers were knowledgeable, very cooperative, and deeply passionate about their bees.

The researcher transcribed the interviews by listening to the recordings of each interview and typing the copy. Backup notes from the interviews were available but seldom needed. Transcription software was not used in the process.

Each of the beekeepers was assigned a code to assure confidentiality. They are coded in this study with a capital R (respondent) in front of a sequential number established according to when their interview occurred.

After all of the interviews were transcribed by the researcher, each of the beekeepers was contacted by email to establish a time when the transcription could be read back and reviewed for accuracy to insure credibility in the study. Nine of the 12 beekeepers responded. In the review process, the researcher read the copy verbatim over the phone and offered the beekeeper an opportunity to amend or update any of the original information.

Trustworthiness

Internal validity for the study was assured through triangulation, member checks, saturation of data, and reflexivity. “Probably the most well-known strategy to shore up the internal validity of a study is what is known as triangulation” (Merriam, 2009, p. 215). Triangulation was achieved through the comparison of interview data from beekeeper interviews with media reports collected from Google News Alerts. Moreover, triangulation was aided by the collection of interview data from beekeepers with different backgrounds and perspectives. Respondent evaluation, otherwise known as member checks, further reinforced the concept of internal validity. Nine of the 12 beekeepers interviewed responded to the researcher’s request to review a transcript of their interview. The researcher believes that saturation of data occurred midway through the interview process. The researcher determined that he was hearing the same things over and over at approximately the sixth beekeeper interview. Reflexivity was achieved through the researcher reflecting critically upon his professional experience in the media industry as a potential source of bias in the study.

Triangulation, peer debriefings, reflexivity, and an audit trail were used to ensure for reliability in the study. Peer debriefings safeguarded against deviation from established methods. The researcher visited with the dissertation committee throughout the research process. An audit trail was maintained to provide evidence of a respectable and compliant study. The audit trail included data maintained in a Black n' Red journal. The data was collected during the researcher's attendance at bee club meetings, seminars, and bee schools. The audit trail also included legal pad notes and checklists that were kept during the data analysis, back up notes that were written during the respondent interviews, and hard copies of all media reports that were printed and saved during the study. External validity was accomplished through transferability. The most mentioned method for achieving transferability is through rich and thick description (Merriam, 2009, p. 227). Rich and thick description was facilitated through the candid and colorful direct quotes and descriptions provided by the 12 respondents who participated in the study. Transferability was also accomplished through variation in the sample of 12 beekeepers.

Researcher's Position

The researcher is not a beekeeper. To learn more about beekeepers and the solutions they have adopted to confront the phenomenon of honey bee decline, the researcher attended numerous bee schools, seminars and county bee club meetings. A journal was kept throughout the process.

The researcher started by attending the Seventh Annual Central Texas Beekeepers Association Beekeepers School in Brenham, Texas on March 28, 2015. This was followed by a trip to Georgetown, Texas on May 28, 2015, where the researcher joined the Williamson County Area Beekeepers Association and participated in regular monthly meetings for over a year. Other events that the researcher attended during this study included a chemical free beekeepers class near Hearne, Texas, a Bee Friendly Austin class, a Biomimicry Education Summit at the Lady Bird Johnson Wildflower Center in Austin, Texas, Austin Area Beekeepers Association monthly meetings and annual seminar, Brazos Valley Beekeepers Association monthly meetings in Bryan, Texas, the Brazos Valley Beekeepers Association Fall Beekeeping School, Trinity Valley Beekeepers Association monthly meetings in Dallas, Texas, a Texas Beekeepers Association annual meeting in Belton, Texas, and a Texas Beekeepers Association summer clinic in Conroe, Texas. Each of the events contributed valuable information and insight into beekeeping, which in turn, provided a foundation for this study.

The researcher has academic training in research principles and methods, and also has many years of experience working in the media industry. The researcher reflected upon his professional background throughout the research process and the potential that brings for introducing bias into the study.

CHAPTER IV

FINDINGS

Introduction

The purpose of this study was to investigate the effects of media reports about honey bee decline on the practices of beekeepers. If honey bee biologists, journalists, and other stakeholders have a clearer understanding of how communications affect the practices of beekeepers, then future communications might be shaped to better serve the needs and interests of beekeepers.

This was a qualitative study with three components. The first component was a qualitative content analysis of media reports about honey bee decline, and the second component was an interpretive study of beekeepers. The third component compared the results of the component one content analysis to the component two interviews to identify common or divergent themes related to beekeeping practices and media coverage of honey bee decline.

Component One – Mass Media Reports

Only mass media reports were used in this study. The reports were collected online through Google News Alerts related to honey bee decline and Africanized bees. Search words included *honey bee decline*, *colony collapse disorder*, *Africanized bees*, and *killer bees*. The feed from Google News Alerts yielded a total of 198 reports, which were printed as they were received in the researcher's email during a three-month period

from April through June 2019. They were then culled to include only stories originating from television, radio, magazine, and newspaper sources. In the analysis of television and radio broadcast stories, the researcher relied only upon the copy provided through Google News Alerts feed. Embedded video and audio elements were not used in the analysis. The reports were further winnowed to eliminate those labeled as commentary, opinion, or letter to the editor. Reports from sources that were not identifiable were also eliminated. As shown in Table 1, 35 states and Washington D.C. were represented in the yield for a total of 108 reports. Eleven of the 108 reports originated from Texas and nine of those dealt with bee attacks and swarms. Twelve reports from nationally distributed publications and broadcast networks in the United States and 17 reports from outside of the United States were also received. All reports were English language. A final total of 137 reports were then coded and analyzed by the researcher for trends that brought further insight into media treatment of stories associated with the phenomenon of honey bee decline.

Table 1. Number of Media Reports

Origin	Media Reports
AZ	5
CA	5
CO	4
CT	2
DC	6
FL	7
HA	1
ID	5
IL	1
KY	1
LA	2
MA	3
MD	1
ME	2
MI	4
MN	4
MO	2
MT	3
NC	4
ND	1
NE	1
NH	4
NM	1
NV	3
NY	6
OH	2
OR	1
PA	1
RI	1
SC	2
TX	11
UT	1
VA	2
VT	2
WA	2
WI	5
National	12
International	17
Total	137

As shown in Table 2, the 137 reports were separated into categories from which dominant themes emerged covering issues around honey bee decline and other related topics including agriculture and environment, bee swarms and attacks, business initiatives, saving pollinators, legal issues, and bee research.

Table 2. Media Reports

Category	# Reports
Agriculture and environment	41
Honey bee decline	36
Bee swarms	18
Bee related business initiatives	9
Bee attacks	9
Perpetuating increases in bees	6
Bee research	6
Legal issues and bees	6
Saving pollinators	6
Total Reports	137

Media Reports

Agriculture and the Environment

Forty-one reports covered issues and events related to agriculture and the environment. One was a story about the importance of the honey bee to human agriculture (Schwartz, 2019). Another story covered an Earth Day celebration where the community had opportunities to learn environmentally friendly practices and children constructed bee houses out of plastic bottles and straws (Zampanti, 2019). In a story about community recognition of environmental heroes, a farmer who restored a five-acre tract into a pollinator conservation area to help reverse a decline in the bee population was awarded with a plaque and cash donation to a local environmental organization of her choice (Ferguson, 2019).

Pollinator and Honey Bee Decline

Thirty-six reports covered a variety of topics specifically related to honey bee or pollinator decline. Generally, the reports echoed concerns about declining bee populations and their importance as pollinators. Illustrative headlines include “Wildflowers help, but Bees Remain on the Brink” (Curley, 2019) and “More Bad Buzz for Bees: Record Number of Honey Bee Colonies Died Last Winter” (Neilson, 2019). The stories reported on a range of potential causes for decline including varroa mites, malnutrition and starvation, loss of territory, climate change, weather, neonicotinoids, chemical poisoning and pesticides, parasites, and poor beekeeping practices. One report said, “scientists are referring to the current situation as the ‘perfect storm.’” (Adler,

2019). A story originating out of Australia reported on problems associated with prescribed burning of vegetation (Adysti, 2019). A report about pollinator decline in Florida said scientists warn that loss of bees may be an indication of “decline in the health of the planet” (Waymer, 2019).

Bee Swarms

A total of 18 reports dealt with swarming bees. The reports were generally informative in nature and provided guidance about what to do and not do if you encounter a bee swarm. One story reported on a swarm of bees that forced a 20-minute delay at a major league baseball game (Bonesteel, 2019). Other print and television outlets reported on the prevalence of swarming honeybees during warm weather months. A story originating from El Paso, Texas reported that a lot of bees and bee swarms would be visible for the next 45 to 60 days but “don’t let them scare you this year” (Kapp, 2019). Another story reported that every spring bees swarm and build hives, but beekeepers say not to spray (Glavin, 2019).

Bee Related Business Initiatives

A total of nine reports chronicled business initiatives related to honey bees. A story titled *The Big Business of Bees*, reported on the economic value brought to agriculture by the commercial beekeeping business (Allington & Stecker, 2019). One story reported on the successful efforts of an entrepreneur who maintains hundreds of beehives on corporate campuses in North Carolina (Eanes, 2019). Honey hunters in

southern China who dangle from cliffs to harvest honey were the subject of another story (Murphy, 2019).

Bee Attacks

A total of nine reports dealt with bee attacks. Seven of the reports were about bee attacks that resulted in human fatalities and one critical injury and two of the reports were about attacks that resulted in the deaths of dogs. Three of the stories reported that Africanized bees were responsible for the attacks. Five of the stories included information about the importance of exercising caution in the outdoors and relying on professional bee removal services to deal with unwanted beehives.

Perpetuating Increases in Bee Populations

Six of the stories reported on efforts to perpetuate increases in bee populations. One story reported on the successful establishment of beehives by faculty and a local beekeepers association for the purpose of bringing bees to prairie land adjacent to a university (Younker, 2019), and another story reported on things you can do at home to “help the bee population thrive” (Whitehead et al., 2019). Public bee yards were the subject of another story (Bryan, 2019).

Bee Research

Six reports covered topics that were relevant to pollinator research efforts. A project that tracks pollinators across the Pacific Northwest was the subject of one story

(Barker, 2019). Another story reported on a plan to breed a bee that is more resilient to Canadian pests and weather (Pfeffer, 2019).

Legal Issues and Bees

Six reports dealt with legal issues and bees, mostly related to bills and ordinances associated with beekeeping. For example, a story originating from Janesville, Wisconsin reported that residents there were legally allowed to keep beehives in their backyards after the city council debated and approved an amended city ordinance (Dayton, 2019). Another story reported on neighbors in a community who were concerned about impacts of backyard beekeeping (Seewalt, 2019).

Saving Pollinators

Six reports covered efforts to save pollinators. One story reported on the importance of pollination being done by insects other than the honey bee (Allington & Schultz, 2019). An automaker's partnership with a veterans' organization to teach military veterans therapeutic beekeeping skills was profiled in another story (Siacon, 2019).

Major Themes

The media reports collected for this study were sometimes overlapping from a topical perspective, but fell generally into seven thematic categories identified by the

researcher as honey bee decline, agriculture and environment, bee swarms and attacks, business initiatives, saving and perpetuating pollinators, legal issues, and bee research.

Media Theme 1 – Agriculture and the environment are important.

Supporting agriculture and practicing environmentally sound habits is a justification for many people who dedicate their time and resources to beekeeping.

Media Theme 2 – The phenomenon honey bee decline requires the attention of beekeepers and other stakeholders.

A sense of urgency exists about dealing with the phenomenon of honey bee decline due to bees' importance as pollinators.

Media Theme 3 – Bee swarms and bee attacks are noteworthy events.

Some of the stories gathered for this study reported on the importance of exercising caution in the outdoors and relying on professional bee removal services to deal with unwanted beehives.

Media Theme 4 – Bees are big business.

The economic value of commercial beekeeping and the successes of entrepreneurial endeavors related to bees, beekeeping, and honey harvesting are reported by the media.

Media Theme 5 – Pollinator research is important.

Ongoing research exists to learn more about pollinator habits. Developing interventions to protect pollinators is reported as an important facet of research efforts.

Media Theme 6 – Legal considerations exist for keeping bees.

Several of the reports collected for this study dealt with legal issues and bees, mostly related to bills and ordinances associated with beekeeping. Urban and suburban beekeepers are impacted by governance of beekeeping activities.

Media Theme 7 – Saving pollinators is a motivating factor.

A desire to preserve pollinators and increase their populations has resulted in the creation of new bee yards and hives. In some cases, it has prompted homeowners to grow pollinator friendly plants in their yards.

Component Two – Beekeeper Interviews

The second component of the study was an interpretive qualitative study of 12 small-scale beekeepers. For this study, semi-structured interviews were conducted with small-scale beekeepers in Texas to learn more about their lives, and their experiences with managing hives. Demographic information for the 12 beekeepers who participated in this study is shown in Table 3. The selection of small-scale beekeepers, rather than commercial beekeepers, provided a sample whose practices were not as likely to be

leveraged by economic drivers. Sampling of subjects was facilitated primarily by contacts made through the Texas A&M University Honey Bee Lab.

Table 3. Respondent Demographics

Respondent #	Location	# of Hives	# of Years Experience
1	Urban	3	5
2	Rural	6	3
3	Rural	22	40
4	Rural	9	6
5	Rural	7	2
6	Rural	8	6
7	Rural	7	1
8	Urban	1	1
9	Rural	3	3
10	Rural	2	2
11	Rural	7	2
12	Urban	2	1

Interviews

R-1

R-1 was interviewed at a restaurant in Dallas, Texas on February 20, 2020. He is a military veteran and retired from a successful career as an economist. R-1 lives in a large metropolitan area in Texas now, but he grew up on a 14-acre plot of land in Arkansas where he learned to keep bees as a teenager. He described his mother as an “original organic farmer” and said that they never used pesticides on their land. He explained that they concocted their own natural insecticide by cooking tobacco stems. Their land had a peach orchard and lots of crimson and clover for groundcover. Neighboring farms were planted with row crops and vegetables.

R-1 has not been involved as a beekeeper since he was a teenager, but he said he has never lost interest. An incident with their bees that resulted in multiple stings and a trip to the emergency room was the catalyst for ending his beekeeping activities. R-1 entered the army shortly thereafter and his brother took over the beekeeping chores on their farm.

R-1 said that his family belonged to a state beekeeping association, but he obtained most of his information about beekeeping from reading library books or from books they had purchased. His family also received a quarterly publication about beekeeping. He said they may have talked to a county agent on occasion, but his recollection was that their area of expertise was in land conservation and not beekeeping.

Even though he is not currently involved with beekeeping, R-1 said that he is familiar with the perils of hive losses. R-1 wondered whether transporting hives to areas

that need to be pollinated might be a cause for hive losses. He mused that it is “easier to haul bees than live fish.” R-1 also said it was his impression that insecticides are the primary cause for honey bee decline. R-1 noted that they lost some of their own hives to disease, but he was careful to say that it was not a “sudden collapse” of the hive. He did not know what caused the loss but guessed that it was due to a virus. He said that if a diseased hive was suspected, they would feed it sugar water with some sort of antibiotic in the water.

R-1 never had any problems with Africanized bees, but he presumes they are widespread throughout the United States now. His impression is that they are hard workers, but aggressive and not good as honey producers.

R-1 does not watch television newscasts. He said they are “all bad.” He prefers to read a prominent daily business news publication, noting that it was his favorite media outlet for receiving news. He also picks up news from the Internet. He does not currently subscribe to a local newspaper. He believes that most newspapers are from “liberal organizations” and he does not want to contribute.

R-2

R-2 was interviewed on March 3, 2020 at a coffee shop in Huntsville, Texas. He has a master’s degree in engineering and keeps bees as a hobby. His son was the one who originally got him interested. R-2 has been involved in beekeeping for about three and half years and he and his son were both certified as Master Beekeepers last year.

R-2 currently manages six hives at the back of a rural half-acre clear plot that he described as the “wild side” of his farm. The hives are spaced about three to five feet apart. R-2 is a member of a local county bee association and he participates in monthly meetings and receives member emails. R-2 also attends bee schools and conferences, taking classes ranging from introduction to advanced beekeeping management. His greatest interest is in the actual management of colonies to learn how to deal with pests and infectious diseases. He said he is “just trying to keep the bees alive.”

R-2 started learning about beekeeping by purchasing books. He explained that he and his son referenced five books and went to the Internet for additional information. Shortly thereafter, they joined a county bee association. Their first hives were purchased in late summer. R-2 explained that this is kind of late to start a hive, but they still did it because they were so excited. He said they “did something right” because the bees survived the first winter. He described his approach to beekeeping as “minimalist,” trying not to open the hives too frequently and covering them when the temperature drops below 35 degrees. R-2 said that they are continuing to learn about beekeeping. He indicated that it is helpful to talk with other beekeepers and to hear the speakers who visit their association’s monthly meetings.

R-2 said that he listens to media reports about beekeeping, but he does not use them for information. He believes the reporting “can be a little emotional.” He prefers to rely on his beekeeping association and on relevant literature for help. The last media report he recalled dealt with the topic of mass death of bees. He also recalled a report related to climate change. In general, the reporting made him “feel sad more than

anything.” He said he wished he could do more. R-2 said that he does not watch television, but he does receive news from major broadcast and cable networks through the Internet.

R-2 said that he has not lost a beehive yet but was remarkably close this year. He related his problem to fluctuations in outside temperature. He said, “the bees don’t know what to do.” R-2 was familiar with the larger issue of honey bee decline, noting that it is a worldwide problem, possibly tied to pollution, pesticides, or climate change. He explained that the phenomenon of honey bee decline motivated him to start beekeeping because he wanted to help out, even if only in a “small way.” As a result, he said he has a stronger will to keep his bees alive.

R-2 noted that he does not use pesticides. He described his beekeeping practices as “chemical free,” where the bees need to be strong enough to survive. He said he feeds them and keeps the hive area clean. He occasionally applies a granular treatment to the grass to keep ants at bay. He further described his work with bees as “nurturing” rather than trying to get something out of them. He said he had honey in his hives the previous fall but did not remove it. He thinks that may have saved his bees from starving. R-2 suggested that beekeepers should minimize extraction of honey or increase feeding of bees. He said erratic temperature changes are affecting plants and bees.

Honey bee decline has been a frequent topic for discussion at monthly bee association meetings that R-2 attends. He believes local association meetings provide the most reliable information because “regionally, different areas react differently.” He indicated that his association has grown since he joined.

R-2 believes that he may have encountered Africanized bees among bees that he has purchased, but he was not worried. He thinks it makes the strain stronger and less susceptible to disease. When he hears others talk about killer bees, he tells them “they’re just bees.” R-2 described Africanized bees as “feisty,” but with a smile, he was quick to add, “I’m feisty too.”

The ability to conduct face-to-face interviews was hindered by the onset of the COVID-19 pandemic. Social distancing requirements did not make it safe or practical to continue meeting face-to-face with respondents. It thus became necessary to resort to phone interviews, beginning with the third respondent in this study

R-3

R-3 was interviewed by phone on June 29, 2020. He has been keeping bees for over 40 years. He currently manages 22 hives scattered on 40 acres of land. R-3 discovered beekeeping while on a Boy Scout trip. He noticed beehives in a backyard and “that started it all.”

R-3 is a member of several beekeepers’ associations. He attends association meetings and enjoys networking with other beekeepers. He has also attended about a dozen bee schools over the years, taking everything from novice to advanced classes. R-3 said that he likes to go to discussions that cover queen rearing, sideline management, and the varroa mite. He explained that beekeeping has changed because of the increase in pests that exist today. R-3 said when he first started, “it wasn’t uncommon to have three years” of queen longevity in hives and “honey flows were great.”

R-3 said that his early education on keeping bees was from reading a lot of books and magazines. Now he mainly learns from YouTube videos, along with monitoring Facebook to see how things are going and what people are doing. If there is something on mainstream media, he will go to other sources to verify what he hears. The mass media reports about bees that he has not forgotten were from an educational media source. He said those were more informative and educational rather than “hype.”

R-3 currently gets his news from television and the Internet; however, he does not favor a particular media outlet. He said he is disappointed in media outlets because of “biased coverage.” R-3 said, “you used to be able to watch the news and be able to form your own opinion based on what you’ve been told, but it’s not like that anymore.”

R-3 said that he has lost beehives. He believes the losses are attributable to a combination of factors, including the varroa mite and CCD. R-3 said that he has been able to limit his colony losses to around 10 to 20 percent. He explained that he knows commercial beekeepers who have experienced honey bee decline, but he said that he has not changed any of his own practices because of the phenomenon. He also said that media reports about honey bee decline have not affected his beekeeping practices. He noted that he has attended a Texas Beekeepers Association clinic where honey bee decline was a topic for discussion.

R-3 does not perceive Africanized bees to be a threat to his beekeeping activities. He remembers media reports about how devastating they would be when the bees first arrived in Texas.

R-3 noted that “bees are not just about honey.” He said they are important to agriculture and our food supply, and there are “some serious things we face out there as our world changes” that affect the bees.

R-4

The interview with R-4 was conducted by phone on August 21, 2020. He has been a beekeeper for six years. R-4 currently manages nine hives in a rural area of Texas. The hives take up less than 400 square feet on a 10-acre plot of land surrounded by countryside offering an abundance of forage for bees.

R-4 said he put in an orchard that “failed miserably” because the soil was not particularly good. The area where he lives has wildflowers and lots of yaupon, so he followed the advice of a farmer who counseled him not to fight the land, but instead, work with it.

A friend of R-4 showed him the basics on beekeeping, which helped him decide it was something he really wanted to do. He described the bee as a “fascinating creature” and believes that the American public does not have an appreciation for how bee colonies operate. R-4 said there are applicable lessons learned from a beehive that can be taken into the real world.

R-4 is not a member of a bee organization, but he follows a local association and goes to its annual meetings. He said the meetings have been “extremely informative.” He has also attended trainings at the Texas A&M Bee Lab, where he learned how to graft queens. R-4 said that “as a beekeeper you kind of have this progression” for learning,

starting with entry level beekeeping, then advancing to more specialized topics. He said he has been to a class on extracting honey and most recently to an information session on Africanized bees. R-4 said he has a hard time identifying queens and he would love it if someone could develop an app or tool to aid in finding queens.

R-4 said that he has a high level of familiarity with a number of bee diseases, but if there is “something funky going on in a hive,” he will go online and find a legitimate source of information to figure out the problem. He also relies on trade publications, but not on mass media sources for information on beekeeping. R-4 said that he has heard media reports about colony collapse disorder and how important bees are, and “without bees we’re going to starve,” which he thinks is true. He said the stories are concerning, but he feels like he needs to ask more questions. He said, “as a beekeeper, what we see in the general media does not get that granular.” He would like to see problems identified and separated between commercial and hobby beekeepers.

R-4 said that he gets about 95 percent of his news from the Internet and five percent from radio. He said he always checks his Yahoo home page, which picks up a variety of news sources on any given date.

R-4 said he has lost a beehive due to absconding of the bees. He said there are more challenges and more diseases today than there were 30 years ago. He has not made any changes due to honey bee decline, but suggested it might be a different matter if he had been keeping bees for 30 years rather than the six years he has been involved in the hobby. R-4 has attended a seminar where honey bee decline was a topic for discussion.

He said that mass media reports about honey bee decline have not affected his practices as a beekeeper.

R-4 has read reports about Africanized bees. His perception is that Africanized bees are potentially beneficial. He said he has heard of a couple of bee attacks, but believes we should not be too quick to judge whether the bees are actually Africanized or “somebody going by with a lawnmower or weed eater real close to a hive and it was just a hot hive and they came out and attacked the person.” R-4 added that his knowledge was based upon listening to probably two hours of a class lecture.

R-5

R-5 was interviewed by phone on August 21, 2020. She was completing her second year as a beekeeper. She has seven hives located on eight acres where she lives in a rural area of Texas. She described the placement of the hives as being in a long rectangle next to her home.

R-5 said she and her husband received a beekeeping class for Christmas from their kids. She said they “really fell in love” with beekeeping.

R-5 is involved with several county bee organizations. She has attended monthly meetings and a class about building top bar hives. She and her husband have also participated in a six-month apprenticeship program. When she started learning about beekeeping, she advanced from an introductory class to one about pollination. After that, they joined the apprenticeship program, which occurred on six Saturdays over a six-month period. She said it provided the “best bang for the buck.” The classes were spread

over different seasons and lasted the entire day. The apprenticeship program included classroom sessions followed by hands-on training in the bee yard. She described the apprenticeship as “just incredible.”

R-5 said she loves getting bee books. She also participates in webinars and subscribes to two bee journals. She belongs to several Facebook pages that are about beekeeping. She described her reliance upon mass media for bee information as zero. She recalled going to a movie once to watch a documentary about bees. R-5 said she does not watch a lot of mainstream television but does enjoy Netflix. R-5 receives her news from local newspapers and from local TV station websites.

R-5 said she has not lost a beehive but noted that they tried a walkaway split earlier in the year that “didn’t go.” She attributed the problem to a queen that did not mate or did not come back to the hive.

R-5 was familiar with problems associated with honey bee decline. Her general impression is that some of the problems are related to mites and swarming issues. She also expressed concern about commercial beekeepers “whirling around the United States with bees in boxes on the back of trucks.”

Honey bee decline has not caused R-5 to make significant adjustments to her beekeeping practices. She used to check for mites but has stopped doing that in an effort to be treatment free. She said that if they were not going to treat, then why bother to test. She said she is increasing her numbers as a “hedge” so she would not lose too many. R-5 said she has been to the Texas Beekeeper Association meeting twice, and recalled that honey bee decline was a topic on both of those occasions. She noted that her honey won

first place in the light amber division at one of those meetings. She said that she “got a nice little blue ribbon to show for it.” R-5 said that media reports about honey bee decline have not affected her practices as a beekeeper.

R-5 said she reads reports about Africanized bees all the time. She said it was a “sensationalistic kind of thing to print.” She described Africanized bees as “more protective and aggressive.” She heard that they make more honey than regular domestic honey bees. R-5 does not think Africanized bees are a threat to her own beekeeping activities. If she hears they are becoming a local problem, then she will be more worried about it.

R-6

R-6 was interviewed by phone on August 21, 2020. He is into his sixth year of keeping bees, and currently has eight highly active and healthy hives on 10 acres in a rural area of Texas. The hives are surrounded by mesquite and cedar trees. R-6 explained that the hives are clustered together in one smallish area that is easy for him to work with. There are farmers and ranchers on all sides of his property, so when R-6 sits on his porch he sees trees in every direction.

R-6 said, “the media kind of led me to beekeeping.” He had always been fascinated by people who were beekeepers and he thought it looked like a “meditative sort of practice.” The more he read about colony collapse disorder and environmental issues, the more interested he became. His wife finally made him take the plunge into beekeeping by purchasing a starter kit.

R-6 is a member of the Texas Beekeepers Association and he is at the apprenticeship level in the Master Beekeeper Program at Texas A&M. He was about to sit for the Master Beekeeper advanced exam in April 2020, but it was canceled due to COVID-19 restrictions. His county does not have a bee club. R-6 said he was “excited” when he attended his first Texas Beekeepers Association annual meeting. He competed in the Texas honey show and received a third-place recognition.

R-6 described himself as a “self-taught beekeeper.” He did not have a mentor and said he lives too far away to visit beekeeping demonstrations. He learned a great deal by reading how-to books. R-6 said he finds “a lot of value in text.” He owns a significant number of beekeeper books published during the 1970s and 80s. He said he tries to read every publication that the Texas Beekeepers Association puts out. He also relies on YouTube videos and webinars about beekeeping. Over the years, his interests have advanced to more scientific and niche topics around beekeeping.

R-6 tries to give back to his own community by providing lectures about beekeeping at the local Rotary Club and Lions Club. He said, “he’s learned so much just by giving those talks,” because people ask questions and if he does not know the answer, he goes home and finds the answer.

R-6 said he depends less now on mass media for information about beekeeping. He said his news aggregator curates stories based on his interests, which often leads him to stories about bees. He said it is easy to get current information on YouTube. He explained that some of the publications he receives in his mailbox are already dated

because YouTube is posting videos “every other day.” R-6 said, “if you find the right source on YouTube, you know it’s good information.”

R-6 said that the most recent story he read in the news about honey bee decline related to use of neonics. He said he encourages the use of organic applications when he visits with community groups.

R-6 said he does not use television, radio, or newspapers for receiving news, but relies upon the Internet. He described himself as “really picky about the sources” because he does not want to get one that leans too far right or left. He described an instance where he saw the same story on two different cable news channels, but they were “headlined in such a completely opposite way that you’re already slanted before you start reading it.”

R-6 said he has lost beehives. He said the first instance was during his second year as a beekeeper and it was devastating. The bees had absconded without any evidence of varroa. He added that he lost a hive as recently as spring 2020. R-6 said that sometimes in beekeeping, some stuff is just a mystery.

R-6 thinks honey bee decline can be blamed on several things at once converging to cause the decline. He said hives are weaker because of the varroa mite, but stressors such as the warming planet and loss of forage are contributing to the problem. R-6 said he is more vigilant now about monitoring for varroa. As stories about the warming planet and colony collapse become “more ominous,” R-6 said he wants to make sure he does whatever he can for the bees. After hearing a media report a couple of years ago that the warming planet causes drought, R-6 said he started topping off a water barrel on

his property so bees would have a water source. R-6 noted that he has attended a virtual meeting about honey bee decline.

R-6 said he has read media reports about Africanized bees. He said the reports are made out to be “much scarier” than they should be, adding that the bees are always referred to as killer bees. He did recall a media report about someone being attacked and injured by bees while mowing grass. R-6 indicated that people often ask about killer bees when he speaks to community groups. He does not consider Africanized bees to be a threat to his own beekeeping activities. He said he knows enough about Africanized bees to know “they’re just like the so-called murder-hornet - they don’t present any threat to my colonies.”

R-7

R-7 was interviewed by phone on August 24, 2020. He has been involved in beekeeping for one year and currently owns seven hives. Two of the hives are on a rural 150 by 150-foot lot and the other five are on a 50-acre plot of land.

R-7 became interested in beekeeping because his garden was failing, and his son started talking about pollinators and bees. He eventually got the bees so he could help his garden.

R-7 is a member of the Texas Beekeepers Association and he plans on joining the county bee club whenever it starts meeting again after the virus. He has taken some online beekeeping classes with content covering what you need to know to get started. He said the section on pest control was especially helpful. R-7 said that YouTube is also

a good resource. R-7 said he turned the news off about two years ago, describing it as “a whole different subject.” For beekeeping information, he relies upon the Internet and YouTube videos. He also gets help from the county extension service and the gentleman who sold him his first hive.

R-7 said he has seen stories about honey bees and honey bee decline. He recalled a recent story in a business publication about roof top bees in New York City and another story blaming farmers for killing bees because they are using pesticides.

R-7 said he relies upon the Internet for news, although he does not track a particular source. He said it is “just whatever flies my way.” He will also check Facebook but feels like it is not the most reliable source for receiving news.

R-7 said he has not lost a beehive yet and hopes he will not. He attributes bee decline to a reduction of available forage for bees and indiscriminate use of chemical treatments. He said the phenomenon of bee decline has changed his practices as an individual, but not as a beekeeper. He said he does not use synthetic chemicals on his yard and garden anymore. Everything is organic.

R-7 said media reports about honey bee decline have not affected his practices as a beekeeper, but they are part of the reason he became a beekeeper. He said, “research dictates that we’ve got to do something or we’re going have a problem.” R-7 added that he is trying to expand the hobby and others have taken an interest after he visited with them.

R-7 said he is aware of Africanized bees but has not experienced an issue. He has seen traps for them around where he lives. He described Africanized bees as “hardier

than European bees” but “more aggressive.” He said if there was a way to keep Africanized bees and not be a problem, he would “do it in a heartbeat.”

R-8

The interview with R-8 was conducted by phone on August 24, 2020. He is new to beekeeping, having been involved for less than a year. He lives in an urban area and has one hive in a large backyard. He said the bees have the advantage of an open bayou at the back of the yard. R-8 said he got into beekeeping when he rescued a wild hive that was in electrical equipment in his yard.

R-8 said he recently joined a local beekeepers organization Facebook group. He looks to the group for help and has posted a few questions. He said he is trying to figure out what people are doing with bees in his area. He added that “YouTube is a big source for information for anything you like and expect to hear about bees.” He said it is “99 percent” of what he knows right now. He noted that his sister was his original source for information. She keeps bees and has been very helpful. R-8 has not been able to attend any bee schools or classes yet, but that is on his to-do list.

R-8 described his reliance upon mass media for bee related information as “anecdotal.” He said most media information is related to bees disappearing. One media report that he recalled was about bumblebees being threatened.

R-8 said he receives most of his news from the Internet. He also uses television streaming services, so he is quite selective about content. R-8 said he tends to listen to

financial channels. He said much of his news is through YouTube because it allows him to “thread the stories of interest.”

R-8 said he has seen a handful of things about honey bee decline, including articles debating whether it is caused by insecticides, pesticides, or environment change. His sister has shared information on the topic as well.

R-8 said honey bee decline has caused him to change his practices as a beekeeper. When a pesticide company came to treat the outside of his home for bugs, he told them to stop spraying the flowers and shrubs. R-8 said he is more cautious about using a spreader to put down granules for killing fire ants and he applied diatomaceous earth around the bottom of his hives to thwart hive beetles from infesting his hive. He also makes sure there is water available for his bees.

R-8 said he has not been to a meeting or school where honey bee decline was a topic for discussion. Right now, he is just looking for basic introductory information. He said how to avoid getting stung by your bees is one topic of interest. R-8 thinks that media reports about honey bee decline did influence his decision to keep the wild hive in his backyard – basically to give them a home. He noted that he is allergic to bees. He has been stung once and said, “I deserved it.”

R-8 said he has seen news reports about Africanized bees. He said it is the “luck of the draw. You can end up with them or not.” He said if you have Africanized bees, you have a higher likelihood of being stung, which he described as “an unacceptable risk.” He also would not want them displacing bees that you want to keep.

R-9

R-9 was interviewed by phone on August 24, 2020. She has been a beekeeper for three years. She maintains three hives on three acres in a rural part of Texas. She described the hives as being situated close to one another on one corner of her plot of land.

R-9 started keeping bees after she and her husband retired. She said she was looking for something to do and beekeeping seemed like the perfect fit. R-9 said bees are a “matriarchal society” and she admires that. She said she is “not in it for money,” even though her bees make more honey than she can use. She gives it away to her neighbors. They offer to buy it, but she refuses to take their money. R-9 described her bees as “my girls.” She said she has an agreement with her “girls” to not sell their honey for fear it would change their relationship.

R-9 is a member of a county beekeepers association and the Texas Beekeepers Association. She has attended the Texas Beekeepers Association Summer Seminar and has been to a beekeeper’s school that was provided by her county bee organization. One of the classes she found memorable was about apitherapy – using bee stings in a medicinal way. She attends her county beekeeper monthly meetings, which moved to Zoom when the pandemic started. She also has a mentor who is a professional beekeeper. She described the mentorship as a “two-way thing,” where the mentor gets to help, and she gets to learn. R-9 said, “the more you’re exposed to hives, the more you see what all is going on.”

R-9 said she does not consume a lot of television news and she got off Facebook in 2016. She learned about colony collapse disorder through print media. She said her mentor has recommended books about beekeeping and she follows a couple of people on YouTube. Among YouTube videos, she said, “you can have some really bad information and some good information, and everything in between.” R-9 said she worries for people because “there’s so much misinformation out there.” The most recent news stories R-9 recalled had to do with murder hornets and how wildfires in California and Australia affected beekeepers.

The news stories that R-9 has seen make her feel good about beekeeping. She said there is a “connection with other people” when her neighbors tell her they have seen her “girls” in their garden. R-9 added that she feels like she is doing something positive for the world. She said, “the world kind of seems out of control” and there is not much you can do, but she feels like she has power in a corner of her world and can make a positive impact.

R-9 said they receive two print newspapers, noting they feel like some of the “last few people in the world who still get print newspapers on the driveway every day.” One paper is local and the other is from a large city nearby. She also subscribes to the online editions of two major newspapers. R-9 reads current events magazines, she follows a weather page on the Internet, and sometimes does Google searches on topics she is interested in.

R-9 said she lost a beehive three years ago. It was one of two hives that she and her husband had rescued from another property. She described herself as “ignorant” at

the time, because one of the colonies starved during the first winter. She said she still feels guilty about it. She said the bees are “like family” and she thinks of them all the time.

R-9 described the phenomenon of honey bee decline as a “three-pronged thing,” attributing problems to the use of chemicals, loss of habitat, and varroa mite infestation. She said that early on she was a little more “starry-eyed about how you kept bees.” Now she sees them as “pets or livestock” where you are responsible for feeding and treating them for pests with scientifically based applications. R-9 said she has attended meetings and schools where honey bee decline was a topic for discussion. One that she described was at the Texas Beekeepers Association Summer Clinic. She said media reports about honey bee decline have not affected her practices in the last three years.

R-9 said she occasionally runs across a media report about Africanized bees where somebody was mowing and bumped a hive or got near some Africanized bees and was attacked. She also recalled driving through South Texas years ago and seeing boxes for monitoring Africanized bees. R-9 said she does not think of Africanized bees as “mean,” but rather, as “defensive.” She tries to see that as a positive trait. Based on what she has learned, she said, “pretty much every colony has some percentage of Africanized genetics.” She does not perceive Africanized bees as a threat to her own beekeeping.

R-10

The interview with R-10 was conducted on August 24, 2020. He has been keeping bees for two and one-half years. He currently has two hives, but at one time had

as many as five. He lives in a rural area and has dedicated about a quarter of an acre of space for his hives. He said a good friend got him into beekeeping.

R-10 said he is not a member of any bee clubs or organizations and has not yet participated in any schools or classes. He said that before he started keeping bees, he heard stories about beekeeping and the decline of bees. He followed up by getting books about beekeeping and then his friend helped him out. He said he finally felt comfortable giving it a try. Now he relies on the Internet, books, and YouTube videos. He described the videos as “invaluable.” He said he does not rely upon mass media for information about bees. He prefers the direct approach – going to “people who are actually working with bees,” but he noted that he has picked up stories in the news about murder hornets. He also recalled stories in the news from a few years back about the decline of the bee population. R-10 said he was a gardener and does a lot of outdoor stuff, so he is “environmentally friendly.” He said if there is an issue with bees, “we need to pay attention and learn about them.”

R-10 said he receives some news from the radio, but the majority is from the Internet. He said one news outlet sends him an email every day, which is where the bulk of his news comes from.

R-10 has not lost any beehives and he said he does not “comprehend” the phenomenon of honey bee decline. He said he has “looked into it a little bit,” but it does not make a lot of sense. He did say he is mindful of it when he is working with his own bees and tries to be diligent about their care. He said he checks them more frequently to

try to catch issues before he encounters a bad one. He said media reports about honey bee decline have not really affected his practices as a beekeeper.

R-10 was familiar with Africanized bees. He described them as “aggressive,” based on what he has read. He said from what he has read and seen, he does not “have to be messing with their house for them to get aggressive.” He said he was not “super concerned” about Africanized bees being a threat to his own beekeeping activities.

R-11

R-11 was interviewed by phone on August 26, 2020. She has been a beekeeper for one and one-half years. She has seven hives located on 15 acres surrounded by cattle pasture. Her hives are situated in a long line on a stand of plywood.

R-11 joined two county beekeepers associations and went to their monthly meetings for about six months before she purchased hives. She said she wanted to learn about bees first. She also attended a beekeepers convention along with another class in Texas. She described the content as introductory and said it was a positive experience.

R-11 gathers information about beekeeping from sources including YouTube, Facebook, monthly association meetings, and beekeeping magazine subscriptions. She also listens to a beekeeping podcast. Before she bought her hives, she read every book she could find on bees.

R-11 does not rely on mass media for bee information because she “doesn’t know if it’s local.” She added that she does not know if it is “trustworthy” information. The most recent news story she remembered dealt with murder hornets, and she also

recalled reading about colony collapse disorder. She said she does not trust mass media. She said that she pays close attention to what mass media says, but she wants to look up information herself to find her own information. She does read a newspaper and watches television newscasts every day.

R-11 has never lost a beehive. She is familiar with honey bee decline and thinks it may be related to chemical treatments, mite infestations, and hives not surviving through the winter months. She said the phenomenon of honey decline has not caused her to change her practices but noted that she is new to beekeeping. She said honey bee decline has been discussed at her monthly bee organization meetings. Media reports about the phenomenon have not prompted her to change anything she is doing.

R-11 said it “scared me when I was a little kid watching movies and hearing about Africanized bees.” She said she is not concerned anymore because she has a bee suit. She thinks Africanized bees are good producers of honey but based on what she has read, they are extremely hard to manage. She perceives Africanized bees as a threat to her own beekeeping activities because she “doesn’t want the drama of having to requeen” her hives. From what she has read, she said hives populated with Africanized bees are hard to requeen because you must split them apart and then requeen each one.

R-12

The interview with R-12 was conducted by phone on September 2, 2020. She has been involved in beekeeping for about one year. She owns two hives and lives in a large

city in Texas. Her hives are in a fenced area measuring about six-by-six feet behind her garage.

R-12 is an avid gardener. She was prompted to start beekeeping when she read that “to get better produce you needed more bees.” She had been organic for about 15 years, so it seemed like a logical fit.

R-12 is a member of a local beekeepers association. She went to a couple of bee schools prior to the pandemic and has been to several virtual meetings since then. She has done online research about beekeeping and has a mentor. She said the first class she took was about basic beekeeping. She advanced to an intermediate class, which she described as more about advanced problems with hives. She receives a beekeeping magazine and relies on YouTube videos. She noted that her YouTube searches are “very specific.” She said she tries to “keep it very much onto the scientific front.”

R-12 said she will read something about bee health or what bees want to eat, and then she will try to supplement that in her garden. She said she is tapping into a lot of gardening resources to help her own bees and the native bee population survive.

R-12 said she feels that “mass media doesn’t always give you 100 percent of truth.” She mentioned murder hornets and said, “had you watched the news three months ago, you would have thought that all my hives would be gone by now.” The most recent media story she recalled had to do with the endangered Rusty Patch Bumblebee. She described it as the only news story “on my radar now.” She said most stories make her want to seek out more information. She said she does not take the stories at face value. For news, R-12 reads a major newspaper publication and has an app on her phone that

aggregates stories from different sources. She also watches the evening news on television.

R-12 has not experienced colony collapse, although she noted that she has lost a queen. She said she is always looking for swarm cells and varroa mites. She thinks honey bee decline is caused primarily by chemicals, which she described as “horrible.” She suggested there are a multitude of other causes as well.

R-12 does not use chemicals in her own yard. She said she “hates” fire ants. To get rid of them she pours a kettle of boiling water on them. R-12 said she tries to be proactive in providing a safe environment for bees and other pollinators.

R-12 said she attended the Heirloom Seed Exposition in California and came home with a lot of notes. Now she makes sure she has water all the time for pollinators and she always has something flowering in her garden. She said what she has learned about honey bee decline has definitely changed her practices – both for beekeeping and for gardening. She tries to listen to media reports to hear what they are saying about honey bee decline, then she parses out what needs to be researched further and what can be disregarded. She said, “if it has anything to do with bees, I’ll listen.”

R-12 has been aware of news reports about Africanized bees since she was a little girl. She described them a “little bit more aggressive.” She said, “they’re not the end of the world – just something to be cognizant of.” She does not perceive Africanized bees to be a threat to her own beekeeping activities currently. She added that she does not think the murder hornet is either. She said, “you don’t just get a beehive and leave it

alone and never look at it again. You've got to get in there and work with it every couple of weeks.”

Major Themes

As the interviews with respondents progressed, major themes began to emerge. This was in large part, due to the respondents' willingness to discuss their beekeeping experiences in a passionate, thoughtful, and candid manner. The researcher was duly impressed with their singular willingness to share information about their lives, practices, and attitudes. Four major themes emerged from the Component Two section of the study.

Respondent Theme 1 – Hive location is relevant.

The motivation for keeping hives was often dictated by where the beekeepers lived. Most of the respondents in this study lived in rural areas of the state. Their hives occupy spaces set aside on their land. R-3 said that bees are important to agriculture and our food supply. R-4 started keeping bees after following the advice of a farmer who told him not to fight the land, but instead to work with it. R-7 became interested in beekeeping because his garden was failing. R-12 said she was prompted to start beekeeping when she read that “to get better produce you needed more bees.”

A total of nine of the respondents had their hives on rural acreages ranging in sizes up to approximately 50 acres. Two of the respondents had urban domiciles and their hives were in their backyards. One of the respondents lives in an urban area now

and no longer keeps bees, however when he was a beekeeper, the hives were on a farm where he lived at the time.

Respondent Theme 2 – The phenomenon of honey bee decline is a consideration.

Each of the respondents shared their beliefs about the cause(s) of honey bee decline. They also shared information about whether they had experienced the phenomenon and what they perceived to be the reason for personal hive losses. R-2 said that the phenomenon of honey bee decline motivated him to start beekeeping because he wanted to help out, even if only in a “small way.” R-6 said he wants to make sure he does whatever he can for the bees. R-7 said honey bee decline has changed his practices as an individual, but not as a beekeeper. R-10 said if there is an issue with bees, “we need to pay attention and learn about them.” R-12 said that what she has learned about honey bee decline has definitely changed her practices – both for beekeeping and for gardening.

Among the respondents, the most frequently cited potential reasons for honey bee decline included chemical poisoning, mite infestations, climate change, and loss of habitat.

Respondent Theme 3 –strong media preferences for the Internet and YouTube.

Most of the respondents interviewed in this study rely heavily – almost exclusively – on the Internet as their primary news source. Four respondents specified

use of television or radio for receiving news information and three respondents said they receive print editions of newspapers.

For information about beekeeping, nine of the respondents indicated that bee organizations and schools are a source of information. Eight of the respondents said they go to YouTube for information about beekeeping. Books and Facebook were cited less frequently as sources of information. R-3 said he mainly learns from YouTube videos, along with monitoring Facebook. In addition to books, R-6 said he relies on YouTube videos and webinars about beekeeping. R-7 said YouTube is a good resource. R-8 said that “YouTube is a big source for information for anything you like and expect to hear about bees.” He added that it is “99 percent” of what he knows right now. R-10 described YouTube videos as “invaluable.”

Four of the respondents indicated that the phenomenon of honey bee decline had caused them to change their beekeeping practices. Only three said that media reports about beekeeping or honey bee decline had influenced their practices.

The researcher found it noteworthy that one of the respondents admitted media reports led him to take up beekeeping and another respondent said news stories about beekeeping made her feel good about what she was doing. Other respondents indicated a general lack of trust in mass media reporting.

Respondent Theme 4 –Africanized bees are not perceived to be a threat

All of the respondents were familiar with Africanized honey bees. Some were better informed than others. At a minimum, they all knew about the aggressive

tendencies and many were aware that it was a hardier bee. R-3 said he does not perceive Africanized bees to be a threat to his beekeeping activities. R-4 said his perception is that Africanized bees are potentially beneficial. R-5 said if she hears that Africanized bees are becoming a local problem, then she will be more worried about it. R-6 said media reports about Africanized bees are made out to be “much scarier” than they should be. R-7 indicated that if there was a way to keep Africanized bees and not be a problem, he would “do it in a heartbeat.” R-11 perceived the Africanized honey bee to be a threat to her own beekeeping activities because it would create problems with re-queening her hives. R-12 said Africanized bees are “not the end of the world – just something to be cognizant of.”

Component Three – Common and Divergent Themes

Listed below is a compilation of the themes found in the Component One and Component Two sections of the study. As shown in Table 4, a total of 11 major themes were identified.

Table 4. Common and Divergent Themes

Media Reports	Bee Keepers			
	RT1. Hive location	RT2. Honey bee decline	RT3. Media preferences	RT4. Africanized bees
MT1. Agriculture & environment		X		
MT2. Honey bee decline	X	XX		
MT3. Swarms / attacks				X
MT4. Business initiatives		X		
MT5. Bee research	X	XXX		
MT6. Legal issues	X			
MT7. Saving pollinators				

MT1 – Agriculture and the environment are important.

MT2 – The phenomenon of honey bee decline requires the attention of beekeepers and other stakeholders.

MT3 – Bee swarms and bee attacks are noteworthy events.

MT4 – Bees are big business.

MT5 – Pollinator research is important.

MT6 – Legal considerations exist for keeping bees.

MT7 – Saving pollinators is a motivating factor.

RT1 – Hive location is relevant.

RT2 – The phenomenon of honey bee decline is a factor.

RT3 – Many express strong media preferences for the Internet and YouTube.

RT4 – Most respondents do not perceive Africanized bees to be a threat.

Common Themes Found in the Study

The respondents lived in rural and urban locations, had varying levels of beekeeping experience, possessed basic levels of knowledge about the phenomenon of honey bee decline and Africanized bees, and had distinct opinions about use of media for news consumption and beekeeping information. Media reports collected for this study included stories about pollinators, beekeepers and associated beekeeping issues that related to many characteristics and opinions associated with respondents in this study.

The following narrative highlights some of the common themes that existed between media reports and respondents.

Media Themes 1, 2 and 5, and Respondent Theme 2 dealt with aspects of the phenomenon of honey bee decline and the potential threat it poses, or has posed, to beekeeping activities. Respondent speculation about reasons for the phenomenon aligned closely with assessments provided in many of the media reports collected for this study, suggesting that Fishbein and Ajzen's (2010) findings about media influence on beliefs may have relevance here – that is, perhaps the respondents are being influenced subconsciously by the mass media reports they are exposed to.

MT1 – Agriculture and the environment are important.

MT2 – The phenomenon of honey bee decline requires the attention of beekeepers and other stakeholders.

MT5 – Pollinator research is important.

RT2 – The phenomenon of honey bee decline is a factor.

Media Themes 2 and 5 and Respondent Themes 1, and 2 were related to reports about pollinators in agriculture, environmental issues, saving pollinators, and respondents' enthusiasm for keeping bees. Many of the respondents expressed a desire to maintain and increase pollinator populations, and to reap associated benefits that bees provide to crops, gardens, and backyard landscapes.

MT2 – The phenomenon of honey bee decline requires the attention of beekeepers and other stakeholders.

MT5 – Pollinator research is important.

RT1 – Hive location is relevant.

RT2 – The phenomenon of honey bee decline is a factor.

Media Theme 5 and Respondent Theme 2 were pertinent to pollinator research efforts and respondents' desire to protect and increase pollinator populations.

MT5 – Pollinator research is important.

RT2 – The phenomenon of honey bee decline is a factor.

Media Theme 6 and Respondent Theme 1 touched on issues related to legal aspects of maintaining hives in rural and urban settings.

MT6 – Legal considerations exist for keeping bees.

RT1 – Hive location is relevant.

Media Theme 4 and Respondent Theme 2 were derived from reports about honey bee business initiatives and respondents' opinions about harvesting honey from their bees.

MT4 – Bees are big business

RT2 – The phenomenon of honey bee decline is a factor.

Media Themes 3 and Respondent Theme 4 were related to news stories about bee swarms and attacks and respondents' knowledge of Africanized bees. Most of the respondents did not perceive Africanized bees to be a threat to their own beekeeping activities but did agree with cautionary practices recommended in some of the media reports collected for this study.

MT3 – Bee swarms and bee attacks are noteworthy events.

RT4 – Most respondents do not perceive Africanized bees to be a threat.

Divergent Theme Found in the Study

Respondent Theme 3 - The respondents interviewed for this study largely ignore traditional mass media sources – television, radio, and newspapers – for information related to news events and information related to beekeeping and pollinator issues. Beekeepers do rely significantly upon the Internet for delivery of news and beekeeping information. Among some respondents, the Internet serves as a delivery platform for news information produced by a national news network or local news outlet. Regardless, individual respondents used words and phrases including “liberal,” “emotional,” “biased,” “hype,” and “does not get that granular” when describing mass media and

media reporting. Overwhelmingly among respondents, the most popular media delivery mechanism for beekeeping information is YouTube. Reasons for the popularity of using YouTube include the variety of content available, the specificity of content available, and the constant updating of content available. Bee associations, bee schools, and bee conventions are also immensely popular sources for beekeeping information.

RT3 – Many express strong media preferences for the Internet and YouTube.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Purpose

The purpose of this study was to investigate the effects of media reports about honey bee decline on the practices of beekeepers. If honey bee biologists, journalists, and other stakeholders have a clearer understanding of how communications affect the practices of beekeepers, then future communications might be shaped to better serve the needs and interests of beekeepers.

This was a qualitative study with three components. The first component was a content analysis of media reports about honey bee decline, and the second component was an interpretive study of beekeepers. The third component compared the results of the component one content analysis to the component two interviews to identify common or divergent themes related to beekeeping practices and media coverage of honey bee decline.

Only mass media reports were used in this study. From April through June 2019, a total of 197 reports were collected through Google News Alerts related to honey bee decline and Africanized bees. Search words included *honey bee decline*, *colony collapse disorder*, *Africanized bees*, and *killer bees*. The reports were then culled to include only stories originating from television, radio, magazine, and newspaper sources. All market sizes were represented in the yield and some of the reports originated from outside of the

United States. All reports, however, were English language. The reports were further reduced in number to eliminate those labeled as commentary, opinion, or letter to the editor. Reports from sources that were not identifiable were also eliminated. The 137 remaining reports were then coded and analyzed by the researcher for trends that brought further insight into media treatment of stories associated with the phenomenon of honey bee decline.

The population for the study was limited to 12 small-scale beekeepers. Sampling of subjects was facilitated primarily by contacts made through the Texas A&M University Honey Bee Lab. Interviews with the beekeepers commenced on February 20, 2020. Each of the beekeeper interviews started with the researcher reading an introductory statement about the study. General instructions for the interview were also provided and permission was secured for the researcher to record the interview. A total of 21 pre-selected questions were asked of each beekeeper. The interviews were semi-structured in nature, as some of the conversations drifted from the pre-selected questions onto related topics. The interviews lasted in duration of anywhere from 30-minutes to one-hour in length. The beekeepers were knowledgeable, very cooperative, and deeply passionate about their bees.

Summary of Findings

The researcher identified a total of 11 themes in the study, which were then compared with each other to search for common and divergent characteristics.

The respondents lived in rural and urban locations, possessed basic levels of knowledge about the phenomenon of honey bee decline and Africanized bees, and had distinct opinions about the use of media for news consumption and beekeeping information.

Mass media reports collected for this study included stories about pollinators, beekeepers and associated beekeeping issues that related to many characteristics and opinions associated with the respondents in this study.

Research Questions

Research Question 1: How does the mass media portray honey bee decline in its coverage of the subject?

The analysis of mass media reports collected for this study revealed a sense of urgency about dealing with honey bee decline due to bees' importance as pollinators and their contributions to agriculture and the environment. Furthermore, it was unmistakable in the reporting that beekeepers, agriculturalists, and researchers all have vested interests in this phenomenon.

The reports for this study were collected through Google News Alerts related to honey bee decline and Africanized bees. Search words included *honey bee decline*, *colony collapse disorder*, *Africanized bees*, and *killer bees*. The search words produced a range of stories about pollinators, beekeepers, and associated beekeeping issues that were often similar from a topical perspective. A closer examination of the stories' content fell into categories that the researcher identified as honey bee decline, agriculture

and environment, bee swarms and bee attacks, business initiatives, saving and perpetuating pollinators, legal issues, and bee research.

Research Question 2: What are the factors that influence small-scale beekeeping practices?

The respondents interviewed for this study lived in rural and urban locations, had varying levels of beekeeping experience, possessed basic levels of knowledge about the phenomenon of honey bee decline and Africanized bees, and had distinct opinions about use of media for news consumption and beekeeping information.

By the same token, the factors that often influenced their small-scale beekeeping practices included the location of their hives, the amount of beekeeping experience they possessed, the amount of knowledge they had about the phenomenon of honey bee decline, and their preferences for receiving news, and more precisely, for acquiring beekeeping information. Broader concerns about the environment and the well-being of the respondents' pastures, gardens, and yards were also a factor.

Research Question 3: Are there common or divergent themes related to small-scale beekeeping practices and mass media coverage of honey bee decline?

A number of common themes emerged from this study. Respondent speculation about reasons for honey bee decline aligned closely with assessments provided in many of the media reports collected for this study.

Mass media coverage about pollinators in agriculture, environmental issues, and saving pollinators correlated with respondents' enthusiasm for keeping bees - many of whom expressed a desire to maintain and increase pollinator populations, and to reap associated benefits that bees provide to crops, gardens, and backyard landscapes. Reports pertinent to pollinator research efforts aligned in similar fashion with respondents' interest in protecting and increasing pollinator populations. There was also common ground between respondents' beekeeping practices and media coverage of issues including aspects of maintaining backyard hives in urban settings.

The single divergent theme was that the study's respondents largely ignore traditional mass media sources – television, radio, and newspapers – for information related to news events, and information related to beekeeping and pollinator issues. They do rely significantly upon the Internet for delivery of news and beekeeping information. Overwhelmingly among respondents, YouTube is a popular delivery mechanism for beekeeping information.

Conclusions

The researcher undertook this study to investigate the effects of media reports about honey bee decline on the practices of beekeepers. The findings revealed that only three respondents indicated media reports about beekeeping or honey bee decline had influenced or caused them to change their practices. The majority of respondents in this study rely upon alternative sources for information about honey bee decline and other

facets of beekeeping. This finding was irrespective of the compatibility of many media reports and the prevailing sentiments of the respondents.

According to Fishbein and Ajzen (2010), beliefs about behavior originate from sources, which may include “personal experiences, formal education, radio, newspapers, TV, the Internet and other media, and interactions with family and friends” (p. 20).

Lorenz and Stark (2015) suggested that “public interest in beekeeping has been fueled by a range of media contributions on the topic” (p. 119).

The findings of this study demonstrated that respondents were more likely to rely upon the Internet for delivery of news and beekeeping information. As previously noted, one of the most popular delivery mechanisms for beekeeping information is YouTube. Among respondents, other popular sources for information included bee organizations and schools. Only four respondents in this study specified use of television or radio for receiving news information and three respondents said they receive print editions of newspapers. The researcher believes the reticence to rely upon mass media – television, radio, and newspapers - is partially attributable to individual respondents’ concerns, whether groundless or not, about the character of information they receive. Respondents used words including “liberal,” “emotional,” “biased,” “hype,” and “does not get that granular” when describing mass media and media reporting.

Althaus et al., (2020) found that occasional high-profile scientific reports have difficulty attracting attention from mainstream media for slower moving problems like pollinator decline (p. 7). Additionally, Lee and Chyi (2014) suggested that there is limited knowledge of why people consume news. “Despite the rise of the Internet, cable

television, and mobile devices, news consumption remains relatively shallow among the general American public” (Lee & Chyi, 2014, p. 707).

In a study about reporting on MRSA, Washer et al. (2008) suggested that “traces of pre-scientific understandings of germs and contagion” are imbedded in culture along with “a framework of scientific understandings of MRSA,” even though not all the ideas that are shared come from newspaper reporting about the issue (p. 47). Accordingly, the researcher believes that digital media messaging cannot be overlooked when examining media preferences for receiving information. ICT tools “provide information immediately, are easily accessed and are user friendly for all” (Wright et al., 2018, p. 28). In an Australian study about providing pest and disease information using ICT, Wright et al., (2018) found that growers and agronomists have favorable attitudes toward “use of webinars, YouTube videos, and podcasts produced during the growing season” (p. 28). Furthermore, Horan (2020), wrote that consumers on YouTube can opt to view “what they want” and “as often as they want,” highlighting the increased flexibility they have in comparison to traditional media (p. 148). Social media outlets, including Facebook, Twitter, and YouTube are important tools for communication in the agriculture community (Bradley, 2012, p. 38).

With respect to beekeeping, Burnham (2012) said it was “pounded home ... that all beekeeping is local, and that this is a kind of learning that cannot be done only from a desk chair” (p. 47). Correspondingly, the findings of this study suggest that consumption and utilization of localized information is not only recommended, but crucial in beekeeping.”

Recommendations

Research

The findings of this study indicated that YouTube is an extremely popular medium for beekeeping information, but it's not without shortcomings for providing reliable and localized information. Additional research is recommended for academics who would have a beneficial interest in learning more about the efficacy of YouTube as an information source. More specifically, qualitative, and quantitative content analyses to measure the level of localism in current YouTube programming are highly recommended. An examination of use of identifying graphics in YouTube videos might aid these analyses. It would be helpful to know what the most sought-after videos for beekeepers are. Research should also be conducted to discover whether localized or regionalized content makes a difference to audiences – does it change anything for the audience?

This study explored mass media portrayal of honey bee decline and factors that influence small-scale beekeeping practices. This study did not analyze social media content. Future researchers may wish to investigate the social media side of portrayals of pollinator decline or other related topics. This could be of benefit to producers of future programming on this topic. Furthermore, researchers should gather additional demographic data on small-scale beekeepers since it is not currently or readily available. Lee and Chyi (2014) noted that news beliefs are positively influenced by age and education (p. 714). As such, researchers should collect information that includes statistics on beekeeper age, education, diversity, and career background. This data may

allow stakeholders to better understand beekeeper preferences for information delivery. It may also improve stakeholders' targeting of future communications.

An assessment of the extent of social capital and opinion leadership within beekeeping organizations may provide further enlightenment. Rogers (2003) asserted that change agents can increase the rate of diffusion of an innovation by targeting their communication activities to opinion leaders in a social system (p. 388). As it relates to this study, extension services are potentially an excellent example of change agents who could provide targeted information about beekeeping to beekeepers, bee clubs, or bee seminars. The use of an extension apiculturist for this purpose would be highly advantageous and expeditious. A specialist such as an extension apiculturist would be an ideal candidate to help audiences understand the critical impact that pollinators have on agriculture and the environment and to encourage the adoption of new and recommended practices. Rogers (2003) noted that client adoption of innovations is the general orientation of change agents (p. 377).

Education

The researcher believes it is vitally important for media outlets to provide reporting that is truthful, accurate, balanced, and digestible for mass audiences. This position is supported by a study of the influence of media communication on behavior related to MCD in South Korea in which Park and Sohn (2013) recommended that media should act responsibly, report truthfully, and provide balanced reports that take many viewpoints into account (p. 207). Furthermore, Novacek (2008) found that news media

may “discourage public interest in environmental topics by characterizing the science behind them as overly complex, immersed in debate and controversy, and detached from human interests” (p. 11575). Accordingly, journalism students should be taught the values of responsible, truthful, and balanced reporting. Journalism students should also be taught to present topics in a manner that does not lose the attention of an audience. While journalism students should be taught a variety of reporting skills so they may adapt to jobs that often require multi-tasking abilities, it may also be helpful to teach them a topic or topics that can be translated into a reporting specialization or beat. With respect to this study, agricultural journalism or environmental sciences are excellent examples of academic disciplines that in practice could become a reporting specialization.

Practice

Considering the findings of this study, the researcher believes it is essential for media outlets and extension services to disseminate reporting on as many platforms as feasible, including Internet websites, and through other social media avenues such as podcasts and YouTube. Extension services may also wish to explore the need for creation of online learning modules as an educational component. Content should be as localized to the market as possible. A study about the role of journalism on YouTube revealed that numerous pathways to YouTube videos, whether through content shared by friends, YouTube recommendation, or links from other websites, provided “an important

blending of journalistic content and popular science content about important societal issues” (Djerf-Pierre et al., 2019, p. 245).

Novecek (2008) suggested that an important strategy for elevating the newsworthiness of biodiversity issues equates to providing opportunities for journalists and reporters to have access to “more translated” forms of stories or meeting as groups or individually with scientists over extended periods of time (p. 11575). Moreover, media organizations play an important role in creating communication pathways, and the repercussions of misinformation on environmental issues need to be understood by scientists, journalists, and media audiences (Smith & Saunders, 2016, p. 388). As such, the researcher recommends that media outlets spend as much time in the field as allowable. The stories that result should not only be accurate, but relatable to a target audience, whether that audience is beekeepers or a broader audience interested in sustainability topics. With respect to the findings of this study, that may require dispatching a media crew out to spend a full day covering a regional bee school, or an entire evening out covering a local bee club meeting for the purpose of obtaining much more than just a short video clip and sound bite. Dedicating reporters to an environment, science, or agriculture ‘beat’ would also be helpful. Likewise, scientists and other stakeholders should take time and exercise care when crafting messages for the media as a safeguard against inaccurate or unrelatable reporting. Collaboration between reporters, scientists, extension services, and other stakeholders is also recommended. In addition to contact in the field while covering a story, this may involve occasional off-site meetings

between reporters, scientists, extension specialists, and other stakeholders to discuss mutual needs, concerns, and available services.

It's more important than ever for academics to teach future generations of communicators traditional journalism values and skills in tandem with teaching elements of media production appropriate for pathways such as YouTube and other social media platforms. Additionally, media organizations and extension services should strive whenever possible to use specialists to provide clearly identifiable, relatable, and targeted information through traditional and social media platforms. This approach will ultimately be of benefit to future audiences.

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APPENDIX A
RECRUITMENT EMAIL

Texas A&M University

A Qualitative Study of Mass Media Reports About Honey Bee Decline and Beekeeper Practices

Recruitment email

Subject Line: Participants needed for a research study about beekeeper management practices

I am currently seeking individuals who are willing to participate in my research study at Texas A&M University. The purpose of the study is to investigate the effects of media reports about honey bee decline on beekeeper management practices so that future communications about the plight of honey bees can be shaped to better serve the needs and interests of beekeepers and the general public.

For this study, I am conducting interviews with hobby beekeepers in Texas to learn more about their media preferences and experiences managing hives. The interviews last about one hour in duration and occur at mutually agreed upon locations and times.

If you would like to participate in this research study, please reply to this email and indicate a time and location that would be convenient for you to meet for an interview.

Please note that participation is voluntary and you can withdraw from the study at any time without penalty.

This study has been approved by the Texas A&M Institutional Review Board (IRB2019-0963). If you have any questions, please contact David Walther at david.walther@tamu.edu or Tracy Rutherford at trutherford@vt.edu

Thanks in advance for your consideration.

IRB Number: IRB2019-0963

IRB Approval date:

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APPENDIX B
INFORMATION SHEET

TEXAS A&M UNIVERSITY HUMAN RESEARCH PROTECTION PROGRAM
INFORMATION SHEET

Title of Research Study: A Qualitative Study of Mass Media Reports About Honey Bee Decline and Beekeeper Practices

Investigator: Tracy Rutherford

Funded/Supported By: This research is funded/supported by Texas A&M University

Why are you being invited to take part in a research study?

You are being asked to participate because you are a hobby beekeeper, 18 years of age or older with less than 50 bee colonies, who lives in the state of Texas.

What should you know about a research study?

- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

Who can I talk to?

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team at 1-979-862-3707, or by email at david.walther@tamu.edu, or at 1-540-231-8187, or by email at trutherford@vt.edu

This research has been reviewed and approved by the Texas A&M Institutional Review Board (IRB). You may talk to them at 1-979-458-4067, toll free at 1-855-795-8636, or by email at irb@tamu.edu, if

- You cannot reach the research team.
- Your questions, concerns, or complaints are not being answered by the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.

Why is this research being done?

If honey bee biologists, extension professionals, journalists, and other stakeholders have a better understanding of how communications affect the practices of beekeepers, it's reasonable to presume that future communications can be shaped to better serve the needs and interests of beekeepers. The purpose of this research project is to investigate the effects of media reports about honey bee decline on the practices of beekeepers.

How long will the research last?

We expect that you will be in this research study for approximately one hour.

How many people will be studied?

We expect to enroll twelve (12) people in this research study.

Is there any way being in this study could harm me?

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.

What happens if I say “Yes, I want to be in this research”?

- For this study, semi-structured interviews will be conducted with hobby beekeepers in Texas to learn about their media preferences and experiences managing their hives.
- The interview session will be approximately one-hour in duration.

- Participants in the interview session will include a researcher (the person conducting the interview) and a beekeeper (you).
- The interviews will occur at a mutually agreed upon location and time.
- Audio recordings of the interviews will be made. You have the option of not being recorded. If you opt not to be recorded, the interviewer will take journal notes during the interview. The notes will then be shared with you so any missing information may be added.
- You will be given a unique code and your responses will not be associated with your name or other identifying information.
- You will not receive any compensation for your participation in the interview.

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

You can leave the research at any time and it will not be held against you.

What happens if I say “Yes”, but I change my mind later?

You can leave the research at any time and it will not be held against you.

If you decide to leave the research, contact the investigator so that the investigator can destroy any data collected from the interview.

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/IRB and other representatives of this institution.

APPENDIX C

INTERVIEW PROTOCOL

Interview Protocol

A Qualitative Study of Mass Media Reports about Honey Bee Decline and Beekeeper Behavior

Texas A&M University

Introduction

Interviewer: (Read all of the following aloud to R)

Good morning (afternoon). My name is David Walther. Thank you for participating in this study. Pollinator welfare is an issue of concern for consumers and stakeholders around the world. The health of honey bees and other pollinators, and their contributions to crop pollination are critical to the survival of agriculture. The media has reported extensively on honey bee decline and its potential threat to our food supply. A specific type of honey bee decline, commonly referred to as “colony collapse disorder,” is a phenomenon in which worker bees suddenly disappear from hives, and colonies suddenly collapse and die. Regrettably, there is a lack of social science research linking the effect of media reporting to the practices of beekeepers and the solutions they have adopted to confront the phenomenon of honey bee population decline. The purpose of this study is to investigate the effects of media reports about honey bee decline on beekeeper management practices, so that future communication about the plight of honey bees can be shaped to better serve the needs and interests of beekeepers and the general public.

Instructions

Interviewer: (Read all of the following aloud to R)

Your responses will be most helpful in this study. There are no right or wrong, desirable, or undesirable answers. I would like for you to feel comfortable with saying what you really think and how you really feel about a particular question. If it is ok with you, I will be tape-recording our conversation. The purpose of recording is to get all the details, but at the same time to be able to carry on an attentive conversation with you. I assure you that all of your comments will remain confidential and anonymous.

Consent Form Instructions

Interviewer: (Read all of the following aloud to R)

Before we begin, please take a few minutes to read and sign this consent form.

(Hand R consent form; after R returns consent form, turn tape recorder on)

Q1. How many years have you been involved in beekeeping?

Q2. How many hives do you manage?

Q3. Tell me about the general location (no specific address is necessary) where you keep your beehives.

Q4. How much space do you utilize for your hives?

Q5. Tell me about how you got involved with beekeeping.

Q6. Are you a member of any bee clubs or bee organizations?

Yes – Ask questions below

No – Skip to Q7

Q6a. Describe your involvement with the group.

Q6b. What activities have you participated in?

Q6c. Have you attended any beekeeping schools or classes?

Yes – Ask questions below

No – Skip to Q7

Q6c1. How many of these have you participated in (roughly)?

Q6c2. Who hosted/led the classes?

Q6c3. What type of content was covered?

Q6c4. Tell me about your experience.

Q7. Please tell me how you gathered information about beekeeping before, during, and after your entry into the hobby.

Q7a. Before?

Q7b. During?

Q7c. After?

Q8. What sources do you typically use to get information about beekeeping?

Q9. Describe your reliance upon information from mass media vs. trade publications and bee clubs.

Q10. Describe any stories you've read or seen in the news about honey bees.

Note to Interviewer: This may require a little introduction to the question to provide context for the R's answers.

Q11. How did these stories make you feel?

Q12. Describe how you receive your news.

Q13. What is your favorite media outlet for receiving news?

Q14. Have you ever lost a beehive?

Yes – Ask question below

No – Skip to Q15

Q14a. Tell me about the reason you believed caused the loss of the hive(s)

Q15. Tell me what you know about the phenomenon of honey bee decline.

Q16. Has the phenomenon of honey bee decline caused you to significantly change your practices as a beekeeper?

Yes - Ask question below

No – Skip to Q17

Q16a. Please describe the changes you've made as a result of what you previously learned about the phenomenon of honey bee decline

Q17. Have you attended a bee club meeting or bee school where honey bee decline was a topic for discussion?

Yes – Ask question below

No – Skip to Q18

Q17a. When and where did the club meeting/school occur?

Q18. Have media reports about honey bee decline affected your practices as a beekeeper?

Yes – Ask question below

No – Skip to Q19

Q18a. Please tell me how your practices have been affected because of the reports.

Q19. Have you read or seen news reports about Africanized honey bees?

Yes – Ask question below

No – Skip to Q20

Q19a. Please tell me about the reports you've seen/read.

Note to interviewer: This may require a little introduction to the question to provide context for the R's answers

Q20. What do you know about Africanized honey bees? What are they? What are some characteristics about them that make them different from the rest of the honey bees in our area?

Q21. Do you perceive Africanized honey bees as a threat to your own beekeeping activities?

Yes – Ask question below

No – Move to Debriefing

Q20a. Please explain why you feel threatened?

Debriefing

Interviewer: (Read all of the following aloud to R)

Thank you very much for your time this morning (afternoon). Your responses have been very helpful. Again, the purpose of this study is to investigate the effects of media reports about honey bee decline on the practices of beekeepers so future communications can be shaped to better serve the needs and interests of beekeepers. As noted earlier, all of your comments will remain confidential.

DQ1. Is there any other information that you think would be useful for me to know?

Yes – Ask question below

No – Skip to DQ2

DQ1a. Please share that information with me.

DQ2. Do you know other beekeepers who might be interested in participating in the study?

Interviewer: (Read the following aloud to R)

Again, thank you for participating.

(Turn tape recorder off).

APPENDIX D
IRB APPROVAL

DIVISION OF RESEARCH



EXEMPTION DETERMINATION
(Common Rule –Effective January, 2018)

October 31, 2019

Type of Review:	Initial Review
Title:	A Qualitative Study of Mass Media Reports About Honey Bee Decline and Beekeeper Practices
Investigator:	Tracy Rutherford
IRB ID:	IRB2019-0963M
Reference Number:	096166
Funding:	None
Documents Reviewed:	<ol style="list-style-type: none"> 1. IRB Application (Human Research) - (Version 1.2) 2. Recruitment email - (Version 2.0 Approved on 10/31/2019) 3. InformationSheet(replacesInformed Consent) - (Version 2.0 Approved on 10/31/2019) 4. dissertationproposal-UPDATEDREVISEDas of 7-7-19 - (Version 1.0) 5. Revised Interview Protocol - (Version 1.0 Approved on 10/31/2019)
Review Category	<p>Category 2: Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: i. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; ii. Any disclosure of the human subjects' responses outside the research would not</p>

	reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or iii. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by .111(a)(7).
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750 Agronomy Road, Suite 2701 1186 TAMU
College Station, TX 77843-1186

Tel. 979.458.1467 Fax. 979.862.3176 <http://rcb.tamu.edu>

Dear Tracy Rutherford:

The HRPP determined on 10/31/2019 that this research meets the criteria for Exemption in accordance with 45 CFR 46.104.

This determination applies only to the activities described in this IRB submission and does not apply should any changes be made. If changes are made you must immediately contact the IRB. You may be required to submit a new request to the IRB.

Your exemption is good for three (3) years from the Approval Start Date. Thirty days prior to that time, you will be sent an Administrative Check-In Notice to provide an update on the status of your study.

If you have any questions, please contact the IRB Administrative Office at 1-979-458-4067, toll free at 1-855-795-8636.

Sincerely,
IRB Administration