
Stakeholder insights into the human-coyote interface in Westchester County, New York



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EXECUTIVE SUMMARY

In recent decades, a number of factors have contributed to an increased potential for conflict between people and coyotes (*Canis latrans*). Problematic interactions between people and coyotes have occurred in many highly developed areas across the United States. Over the last few years in New York State (NYS), Department of Environmental Conservation (DEC) officials noticed an increase in the number of coyote-related incident reports filed with the agency. Managing human-coyote interactions to reduce negative impacts is of growing interest among many wildlife managers and communities, but little scientific information about human-coyote interactions in suburban landscapes is available.

To improve understanding of the extent and nature of public experience with coyotes, we studied the human-coyote interface in suburban Westchester County, New York. The investigation has both a human dimensions (HD) and ecological inquiry and will provide baseline data about issues related to coyote presence in suburban communities in NYS. The HD project evaluates people's attitudes about coyotes and behaviors related to coyotes. In 2006, we conducted informant interviews to examine topics for a survey of residents within the study area. This report details the interview process, and includes the presentation of initial insights garnered from this preliminary work.

Four towns within Westchester County, New York were identified for the study area. Interviewees were identified using an informant-based, or snowball, sampling approach. Interviews were semi-structured, in-depth, and digitally recorded. Analysis included coding responses to all questions from the interview guide and evaluating responses for common themes.

The vast majority of interviewees were aware of coyotes from first-hand experience. Informants believed that community members, however, had little knowledge about coyotes and were generally unaware of coyote presence in Westchester. This lack of awareness and/or understanding was attributed particularly to newer residents from urban areas. Fear and concern for children or pets were most often cited as the coyote-related topics discussed in the community. Few informants believed that coyotes were an issue for the community, and most asserted that problematic interactions were very rare. It was suggested that when residents did have a problem, they were most likely to turn to local authorities such as the police. Over the last 1-5 years, many interviewees noted an increase in awareness of interactions but expressed uncertainty as to whether it was an increase in the number of interactions or simply due to more media coverage of the events. Informants were generally accepting of coyote presence in suburban areas, but many believed the general public did not share this view. Both positive and negative impacts associated with coyote presence in suburban areas were identified. Most interviewees believed an encounter with a coyote was unlikely for the average Westchester resident and that coyotes generally avoided people.

It was especially noteworthy that informants believed coyotes were not an issue within the Westchester community. Despite the fact that most informants had first-hand experience with coyotes and had perceived an increase in interactions, they nevertheless asserted the belief that actual human-coyote encounters were infrequent in Westchester. This may be understood in the context of Westchester's significant exurban population. Perhaps it is this particular group

that lacks awareness and knowledge of coyotes. Indeed, many informants specifically referenced this subpopulation when describing circumstances in the community. It will be important for wildlife managers to be aware of this group's potential orientation when considering community response to coyotes if interactions increase.

Given the disparity between the DEC's and informants' initial assessment of the coyote situation within Westchester County, an inquiry is particularly relevant at this time. The themes that emerged from the analysis of interviews will be considered as a questionnaire is developed for Westchester residents. As informants indicated the belief that much of the existing concern about coyotes comes from exurbanites, it will be especially useful to include measures that examine location of childhood residence, tenure in Westchester, and awareness and attitudes about coyotes.

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The cover photo was taken by Tony Northrup and is used here with permission.

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INTRODUCTION

Coyote (*Canis latrans*) populations have expanded their ranges eastward throughout North America over the last century (Gompper 2002; Parker 1995, Figure 1). It appears that coyote populations entered New York State (NYS) during the mid-twentieth century, primarily through Canada (Fener et al. 2005). Since that time, they have expanded their ranges and are currently believed to inhabit all parts of NYS with the exception of Long Island. During this same period, extensive suburban and exurban development has occurred across NYS (Pendall 2003), fragmenting and urbanizing areas that were once open landscapes. This combination of factors has led to an increase in overlap between the spaces that humans and coyotes inhabit. As a result of this overlap, the opportunity for interactions between people and coyotes has increased, and thus the likelihood of conflict is elevated.

Coyotes are present in many highly developed metropolitan areas across the country, such as Los Angeles (L.A.), Chicago, and Boston. Some of these places have experienced human-coyote interactions with negative consequences. For example, in the suburbs of L.A., coyotes have scratched or bitten several children over the last several decades (Howell 1982). In fact, in 1981 a young girl died as a result of injuries sustained from an encounter with a coyote (Timm et al. 2004), the only known fatality resulting from a human-coyote interaction in the United States (U.S.). While a serious coyote attack on a human has never been reported in NYS, companion animals have been injured or killed by coyotes (e.g., in Westchester County a coyote jumped a small fence and took a Lhasa apso from a backyard in May 2005 [M. Putnam 2006, personal communication]). During some of these encounters humans have intervened to protect pets and been scratched or bitten. For instance, in March 2006 a teenager outside of Ithaca, NY went into his backyard to retrieve a cat cornered by a coyote. An interaction between the coyote and the boy occurred and the young man was scratched several times and required a post-exposure rabies vaccination.

In recent years, the NYS Department of Environmental Conservation (DEC) has noted an increase in the number of reports it receives about coyotes. Hotspots for these reports appear to be suburban areas like Westchester County, just north of New York City (NYC) (Figure 2). In response to this situation, the DEC wants to develop proactive management strategies that will encourage human-coyote coexistence but avoid interactions with serious negative consequences. Similarly, other community organizations (e.g., parks department, cooperative extension) desire information to design effective education and outreach materials aimed at avoiding conflict. Little is known, however, about the human-coyote interface in suburban areas (Wieczorek Hudenko et al. in review).

While empirical work specifically focused on human-coyote interactions in suburban spaces is sparse, several previous studies provide some initial insights. Two studies on public attitudes toward coyotes suggest that attitudes are not particularly positive, and range widely across interest groups and socio-demographic characteristics (Kellert 1985; Stevens et al. 1994). Some researchers qualitatively discuss individuals' experiences with coyotes in suburban habitats and describe potential patterns among these interactions (Timm et al. 2004; Howell 1982). They propose abundant food sources and lack of harassment contribute to the occurrence of negative human-coyote encounters. These suggestions are bolstered by recent

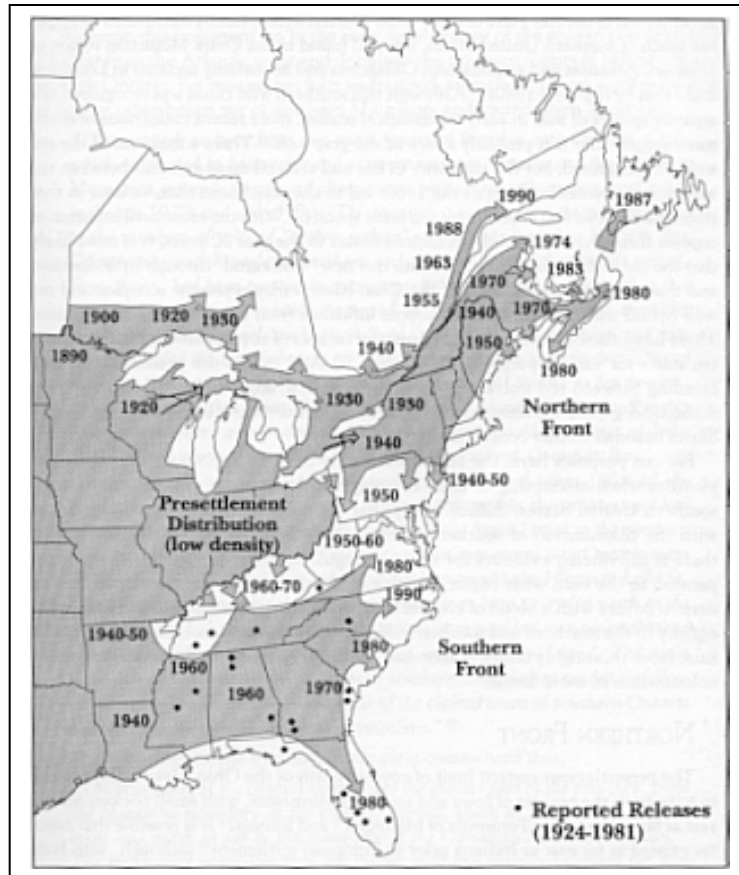


Figure 1. The eastward expansion of coyote population range during the 1900s. From: Parker 1995.

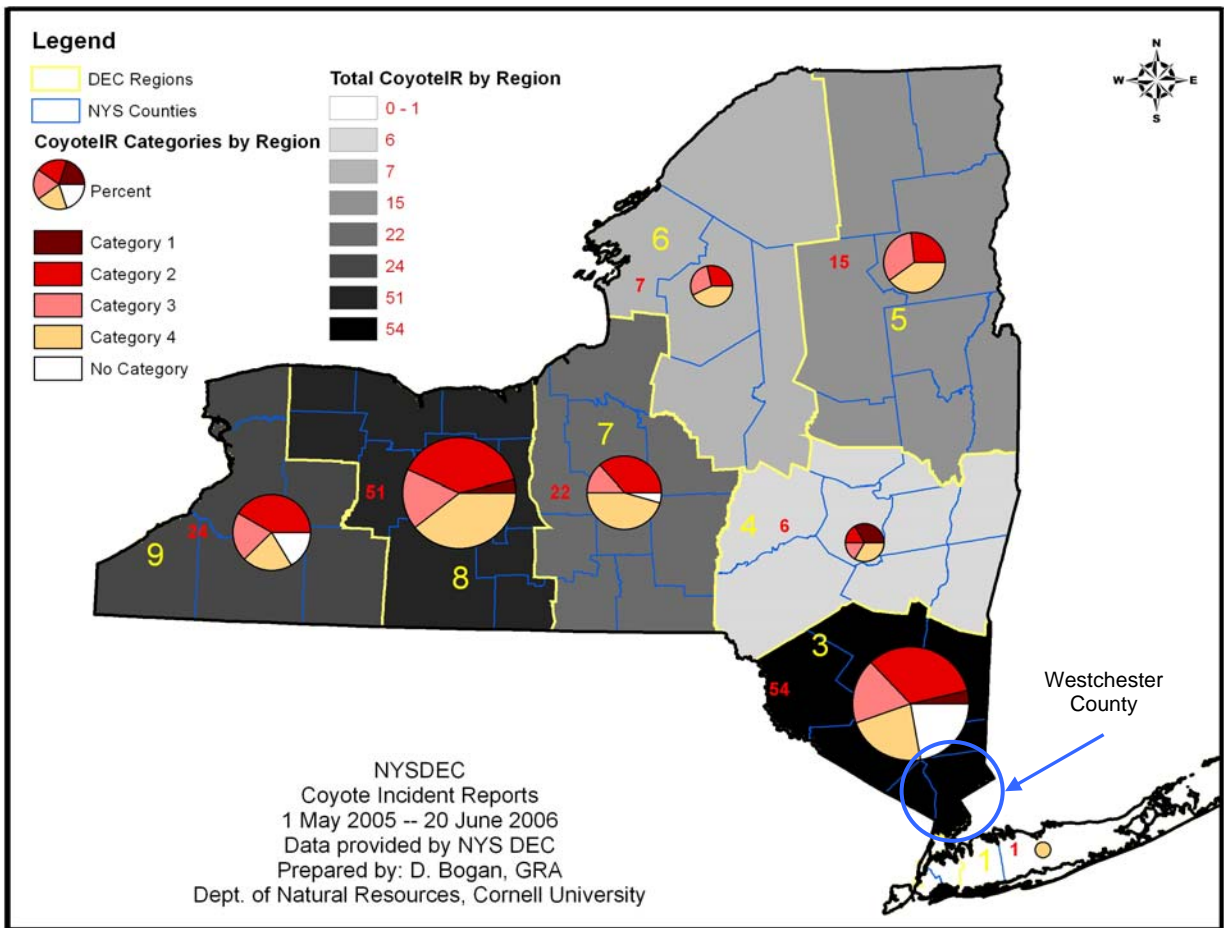


Figure 2. Map of incident reports, by DEC region.

ecological studies that conclude that human behaviors appear linked to the development of coyote behaviors that increase the potential for negative interactions. The literature suggests two primary mechanisms through which this can occur: food conditioning and/or habituation. In wildlife species, food conditioning refers to a process of classical conditioning through which animals learn to associate food with the presence of humans and human activities. Habituation describes an animal's lack of behavioral fear response to the presence of humans after repeated, non-consequential encounters (McNay 2002). The extent to which these behaviors may occur in suburb-dwelling coyotes in the Northeast and the role humans play in the formation of such behaviors is not understood. This study addresses that information gap by investigating people's experiences with, and behaviors and attitudes toward, coyotes in a suburban area of NYS.

PURPOSE

The New York Suburban Coyote Study is an integrated human dimensions (HD) and ecology inquiry. This multi-year investigation will provide baseline data about issues related to coyote presence in suburban communities in NYS to support policy and management actions for coyotes in NYS. The ecological work investigates coyote spatial ecology and social structure and examines coyote dependence on anthropogenic resources (i.e., food and habitat). The HD inquiry evaluates people's attitudes about coyotes and behaviors related to coyotes to increase understanding of how these factors influence the coexistence of humans and coyotes as well as the outcome of interactions. Specifically, the primary objectives of the HD study are to:

1. understand the extent and nature of human-coyote interactions within a suburban community in NYS;
2. characterize underlying attitudes of the community toward suburban coyotes;
3. measure risk perception of community residents with respect to coyotes;
4. characterize human behaviors that could influence coyote-human interactions.

The HD work is designed to occur in two phases. The initial phase addresses the first three objectives by describing details of the human coyote interface in communities. The second phase will target objective four and provide in-depth data about the circumstances surrounding actual encounters between humans and coyotes.

The first phase of the study was conducted in 2006. A mixed-method approach was used; qualitative interviews were the initial form of inquiry. Specifically, we conducted informant interviews to examine topics for a survey of residents within the study area. This report details the HD interview portion of Phase I of the New York Suburban Coyote Study, and includes the presentation of initial insights garnered from this preliminary work.

METHODS

Study area selection

The DEC receives calls about coyotes from all over NYS, but several suburban areas (e.g., near Rochester, NYC, Buffalo) have higher numbers of reports than the rest of the state. For example, DEC Regions three and eight, which include the suburbs of NYC and Rochester, each have recorded over fifty coyote incident reports since formal reporting began in May 2005. In contrast, DEC Regions four, five, and six in the northeast portions of the state have reported between five and fifteen telephone calls (for more detailed information, see Figure 2). The greatest number of monthly reports often comes from Westchester County, and consequently drew our attention as a potential area of focus for the purposes of this study. Additionally, Westchester has a great deal of geographic diversity for a suburban region (Figure 3). Northern areas of the county include developed areas, but also contain large tracts (e.g., 4700 acres) of green space. Some of these undeveloped lands are parks and preserves, others estates with small-scale farming and animal husbandry on-site. Thus, with respect to land use, northern portions of Westchester retain a somewhat rural character. The southern part of the county is more intensely developed; residential lots are smaller, as are natural areas. The research team chose two adjacent towns in the northern part of the county (Yorktown and Somers) and two in the southern portion (Greenburgh and Mount Pleasant) (Figure 3). This stratification would allow us to identify any potential differences between communities with different development characteristics.

Sampling approach

We used an informant-based, or snowball sampling (Babbie 2003), approach to generate the interview sample. Initially, the research team identified six key informants who were involved with coyote-related issues within the Westchester community. As part of their interview, those individuals were asked to refer research staff to other members of the community who might offer a perspective on coyotes. The goal was to speak with a diverse set of stakeholders so as to learn about a variety of perspectives on coyote issues. Additional people were interviewed until the interviewer reached a point of saturation, where new interviews did not generate novel perspectives, ideas, or expressions of beliefs, attitudes, or experiences.

Interview guide

The interviews were semi-structured, aided by an interview guide to direct the course of discussion (Appendix A). The interview guide contained a series of general questions and follow-up probes related to coyote presence in the interviewee's community. The topics in the interview guide were identified as potentially relevant based on background research by the Human Dimensions Research Unit (HDRU) team and consultation with the DEC Coyote Project Contact Team. Questions in the guide were designed to explore a number of topics including: awareness and knowledge of coyotes, experiences with coyotes, attitudes towards coyotes, concerns about coyotes, whether coyotes were perceived as an issue in the community, coyote-related human behaviors, whether interviewees perceived changes in the extent or nature of human-coyote interactions over time, causes of human-coyote interactions and impacts associated with coyote presence in the community. The interview guide was reviewed by HDRU

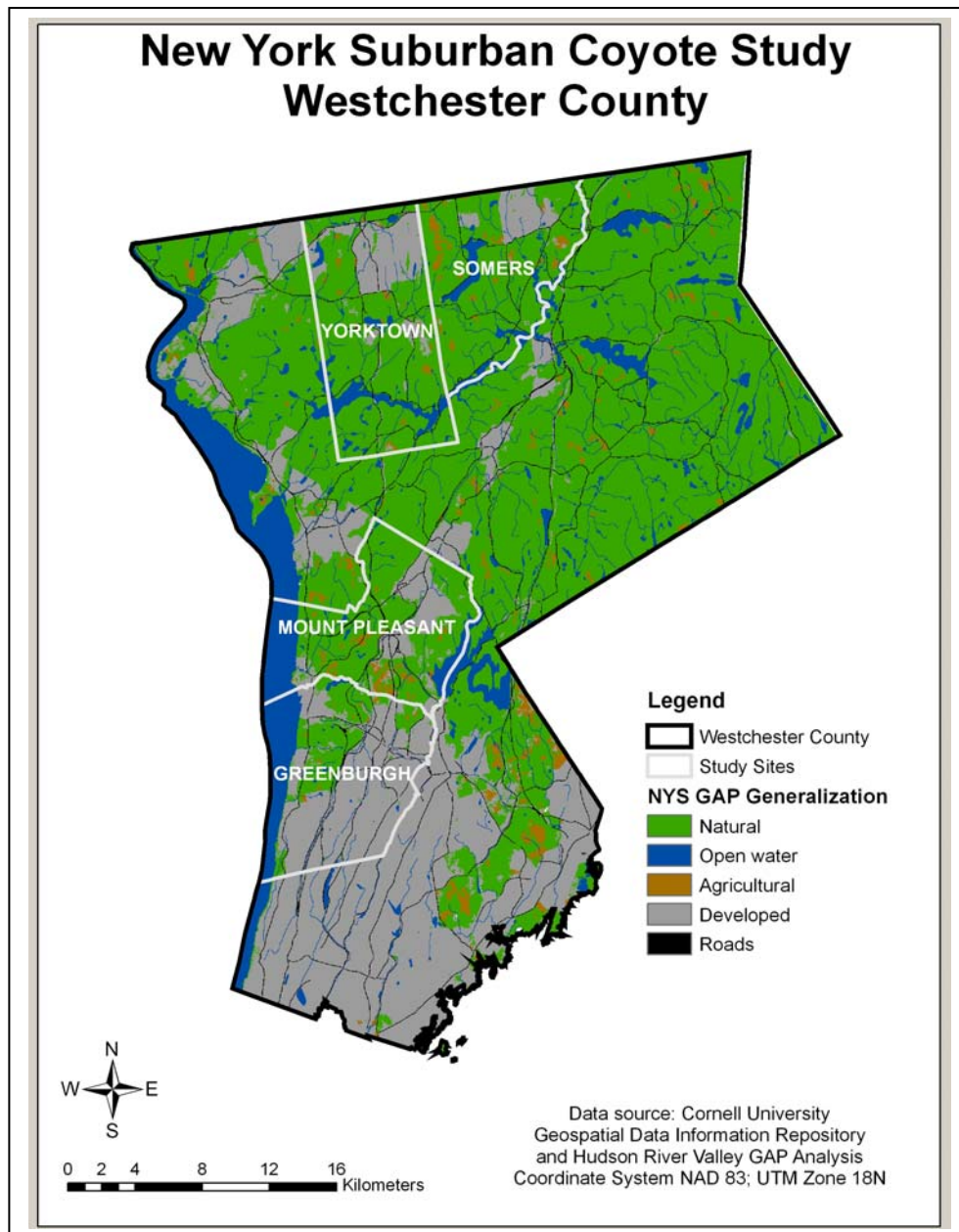


Figure 3. Westchester County and designated study areas.

staff, members of the Cornell Coyote Research Team, and members of the DEC Coyote Project Contact Team.

Interviews were designed to occur one-on-one, with only the interviewer and informant present. The interview protocol and interview guide were reviewed and granted approval by the Cornell University Committee on Human Subjects (Protocol ID# 06-05-045).

Analysis

All interviews were recorded with a digital voice recorder after obtaining verbal consent from each interviewee. One member of the research team listened to all of the interviews and coded responses to each question. Interviews were partially transcribed to record rich text examples, provide context for responses, and capture details in the interviewees' descriptions.

Interview procedure

Interviews were conducted from June 1st - July 21st, 2006 in various locations around Westchester County. Interviewees were contacted by phone, informed that the researcher had been referred to them, and asked to participate in the study. Interviews took place at a time and location designated by the subject. Locations of interviews were often the informant's place of work, other locations included: coffee shops, diners, or informants' homes. A total of 33 one-on-one interviews took place. Two additional interviews of two people, and one of three, took place, although the individuals answered interview guide questions separately. In all, responses from 40 individuals were coded for analyses. While interviewing at a county government office, the interviewer had the opportunity to conduct a group discussion with seven staff members. The discussion covered most of the topics in the interview guide, however, responses to questions were formulated by the group. The responses were reviewed for any unique information, but because of the group nature of the discussion, the responses were not coded in the same manner as individual interviews. Interviews lasted from approximately 10 minutes to 105 minutes; the average length of interviews was 52 minutes.

FINDINGS

Informant characteristics

The sampling approach led us to a diverse group of informants. Their professions and orientations varied widely. Informants included: county park staff, environmental educators, town officials, non-profit organization directors, Cornell Cooperative Extension (CCE) staff, hunters, Nuisance Wildlife Control Officers (NWCO), a county legislator, county environmental planners, state agency staff, managers of estates with animal husbandry, school officials, residents who had experienced and had not experienced interactions with coyotes, a forester, police officers, animal wardens, a veterinarian, a golf club manager, and others. Most interviewees lived in Westchester County or a county bordering Westchester, and residences ranged from apartments in urban areas (Yonkers/Bronx) to large properties with farm animals in rural regions (Putnam County). Informants had lived and/or worked in Westchester from less than one year to over 70 years.

Awareness and experience

Informants were aware of coyotes from a variety of first-hand experiences (e.g., through sightings [n=38]), and second-hand sources (coyote-related content in the newspaper [n=31]). Some had heard coyotes howling, or received coyote-related telephone calls as a result of their position. A few interviewees cited conversations about coyotes with friends and family. Only three people noted learning about coyotes from the DEC; two of these were animal wardens who turned to the DEC as a result of telephone calls they received. Several interviewees mentioned using the internet as an information source as well.

In contrast to their own awareness, most informants believed the general public in Westchester was not aware of coyote presence and had little knowledge about coyotes. Representative comments include:

“95% of the people don’t even know they’re here” (122).¹

“Most people don’t even know there are coyotes around them, they don’t realize that they’re right here...I don’t think it’s on their horizon at all” (120).

Many informants specifically singled out newer residents who had relocated from urban centers as part of this “unaware” portion of the Westchester population. They suggested that exurbanites in particular lacked awareness or knowledge about coyotes in the community:

“These people moving up are city people, they don’t even walk on their own grass. They don’t know about wild animals” (119).

“A lot of people don’t even know we have coyotes around here, especially the new people” (122).

“I think people who come up from the city have no idea [about coyotes]” (134).

In addition to believing that exurbanites’ background might influence their awareness or knowledge of coyotes, our informants describe a special “mentality” among certain Westchester residents:

“The New York City transplants don’t understand wildlife, aren’t used to any animal whatsoever” (103).

“It’s the city people moving up. They don’t understand” (119).

“The urban sprawl is bringing in a new mindset of people” (109).

Many interviewees hypothesized that this unique orientation would influence peoples’ experiences with coyotes.

¹ Numbers in parentheses denote interview identification codes.

Of the interviewees who had seen a coyote, most saw an animal moving swiftly along a road or through their yard and simply observed it. About half of the informants (n = 20) reported having a “close” encounter with a coyote. Only three individuals expressed that the experience was negative: a mangy coyote lingered in a backyard near children; a coyote approached a person walking a dog and came close enough for the individual to strike it; an individual rounded a building corner and came within five feet of a running coyote – the coyote continued moving, but the person was startled. People who had not had a close encounter with a coyote were queried as to what they thought that experience would be like. Most informants suggested it would be a positive and/or exciting experience and that they would simply observe the coyote unless it came within their immediate vicinity in which case most reported that they would scare it away with noise and arm waving, and/or remove themselves from the situation. Three individuals stated that a close encounter with a coyote would be a negative experience for them. Many interviewees knew someone else who reportedly had a close encounter with a coyote. These experiences often involved pets and were interpreted as negative.

Coyotes and the community

We asked interviewees what coyote-related topics were discussed in the community. Fear and concern for children and pets was most often mentioned, followed by excitement and interest. According to informants, sentiments in the community included “coyotes do not belong” in Westchester, and that coyotes should be removed or controlled. Again, these ideas were reported to be particularly prevalent among newer residents who moved to Westchester from more urban areas and had little awareness or knowledge about wildlife. In the opinion of one interviewee:

“I think they’re more anti-coyote, they’re scared. They don’t want them in their neighborhood. They think they don’t belong. They moved here from the city for the rural experience, but it’s like ‘wait a minute, there are coyotes?’” (120).

Several people also noted that hunters often discussed the topic of coyote impacts on the deer population. Most individuals expressed the belief that the media created heightened attention and concern about coyotes and that coverage tended to have a negative slant, thereby influencing the topics and tone of coyote-related discussions within the community.

Relatively few informants (n = 7) believed coyotes were an issue for the community. Four of these were town animal wardens, and another individual thought the primary public issue was concern for coyote welfare. Several other interviewees suggested that the issue was ambivalence in the community as to whether coyotes were of concern. The majority of interviewees stated that coyotes were not an issue and made comments such as:

“When I talk about it with friends and neighbors, it’s not a subject that will come up, because they don’t exist as far as we’re concerned, other than something that you read about in the paper” (106).

“It’s not an issue. There are some people who fear them, but if it weren’t for a couple of news articles and you guys with your study it would just be status quo” (129).

“If you have people telling you that this is an issue, I’d be surprised” (121).

“I don’t think anyone views it as a huge problem” (135).

“People in town have more concern about the deer than they do the coyote” (109).

Informants did recognize that some people had problems with coyotes and may view it as an issue but asserted that there were very few such circumstances:

“[It’s] not really [an issue] except for the few people who think they are a threat” (128).

“Even the police said this is the first time they’ve had a call about a coyote” (124).

“It’s not really an issue, but for the people who fear them – like in’s neighborhood, it *might* be an issue” (120).

Even informants who had a negative experience with a coyote viewed this as an uncommon occurrence. This is apparent in the following quotes from interviewees:

“It’s not a major issue in the community, but for those of us with coyotes in the yard and with kids, it’s a concern” (118).

“I don’t look on the coyote as a threatening animal. They’re pretty shy. This is so out of the ordinary for them to do something like this [approach a person walking a small dog]” (124).

When community members do have concerns, informants believe the most likely place for people to turn are local authorities, such as police departments and animal wardens. Other organizations also mentioned were: county parks, CCE, DEC, and NWCOs. Interviewees were of the opinion that the most appropriate authorities for dealing with coyote concerns were those at the local level such as the police department, NWCOs, or the municipality, although some did mention the DEC. Several people suggested that it would be helpful for the DEC to provide these groups with the appropriate information and training so that they would be better equipped to handle coyote concerns.

When asked if they had noticed any change in the frequency or nature of human-coyote interactions, most interviewees stated that they had perceived an increase in interactions, or at least an increase in awareness and media coverage of interactions, whether or not they were objectively increasing in number. A time frame of 1-5 years was most often ascribed to this perceived increase in human-coyote interactions and reporting of interactions. Only one informant suggested that the nature of interactions had changed, although the individual noted that this was related to personal experience during the month prior to the interview and not something that was evident on a community-wide level. This person had a sick coyote near the backyard that initially fled when people went outside. Over the course of a few weeks, the animal appeared to become less wary and remained close to the house despite loud noises from

the residents. After four weeks, the animal disappeared; due to its unhealthy appearance, the informant believed the coyote died.

Concerns

When asked how they felt about coyote presence in *their* neighborhoods, interviewees had mixed responses. Some had no concern, others expressed concern about children, pets, the coyotes, disease transmission, and other potential problems. A number of informants conveyed positive or ambivalent feelings about coyote presence in neighborhood spaces in general, but their responses were more negative when referring to coyote presence in their *own* yard. Fewer individuals expressed concern about coyote presence in generically described “residential” areas. For some people this acceptance of coyotes in residential areas was contingent upon “good” management of the coyote population and coyote-related human behaviors. Many noted the potential benefits of coyote presence such as rodent and deer population control (although impact on deer was seen as negative to several interviewees who hunted deer within Westchester). Many interviewees stated that they believed the general public, particularly those living in, or originally from, more urban areas would be less accepting than informants were of coyote presence in residential areas.

“People in town [ex-urbanites] aren’t familiar with the wildlife and they think it’s so unusual, they don’t like it” (111).

“Newcomers are the ones who are concerned about their dogs, they’re city dwellers and not used to seeing wildlife” (109).

Comments like this echo other sentiments among informants about the particular orientation of exurbanites.

Coyote presence, interactions with humans, and impacts

A variety of reasons were offered to explain coyote presence in Westchester County and any potential increase in population numbers and/or interactions with people. Most often cited were development and sprawl, and associated easy access for coyotes to food and shelter. Human and coyote population increases, human behaviors, and a lack of hunting pressure were also offered as possible influences. The vast majority of interviewees believe that for the average Westchester resident, an encounter with a coyote was very unlikely. The few informants who had experienced a negative interaction with a coyote felt that encounters were very likely.

All interviewees who responded directly to a question about expectations of coyote behavior stated they anticipated a coyote would be wary of humans and flee; i.e., engage in its “natural” behavior. When probed, people described natural coyote behavior as “going about its business”, hunting, and ignoring unseen humans. This same group also indicated that they believed the coyotes in Westchester would indeed respond in this manner.

We asked interviewees what they felt was responsible for interactions between humans and coyotes. They typically cited one or more of the following: human behavior, coyote

presence, or an interaction of the two that many informants termed “chance.” Informants described encounters as the natural outcome of an interaction between regular (dog walking, hiking nature trails) or poor (maintaining outdoor cats, feeding pets outside) human behaviors and the natural behavior of a coyote. Two thirds suggested that exposure to coyotes could be controlled through human behavior modification.

Informants identified a diverse list of both positive and negative impacts of coyote presence in suburban habitats: feral cat control, rodent control, concern for pets and children, human-coyote conflicts, increased awareness about wildlife, a balanced ecosystem, increase in disease incidence, effects on deer, demand for coyote extermination, and increased risk to coyotes’ welfare. When discussing impacts, our informants again singled out newcomers as particularly reactive to coyote presence.

“The effect [of coyote presence] is a lot of fear and anxiety for people because they move here from the city and they have no idea about wildlife and they only see what’s in the media” (108).

It is interesting to note that every one of our interviewees mentioned “disease” as an impact of concern. Not all of our informants were concerned about disease incidence or transmission themselves, but rather many believed that the public would focus their response to coyote presence around this topic. A number of individuals suggested that if the community were to become more aware of coyote presence, disease would be one of the primary concerns for most people and had the potential to become a “major issue.” When probed about the meaning of “major issue,” most people described a significant public outcry against coyotes and possible calls for extermination.

The specific impacts of human-coyote interactions mentioned by our informants were more limited. Interviewees believed interactions would result in an increase in awareness of, fear of, and concern about coyotes. Many also felt that the increased awareness could create positive opportunities for management initiatives through education that encourages human behavior change. A substantial proportion of informants also expressed concern for the coyote population if interactions occurred regularly because they believed that interactions would lead to an overall lack of tolerance in the community and thus negative consequences for coyotes.

DISCUSSION

The goal of this inquiry was to inform design of survey instrument to be implemented with a larger subset of the Westchester population. The research team sought to verify the importance of coyote-related topics identified *a priori* as potentially relevant to communities. The interviews allowed us to gain insights into community perspectives and framing of coyote-related issues. Additionally, this phase of inquiry provided baseline information about people involved with coyote issues, from a management-oriented perspective and/or from personal experience, and how they perceive community circumstances and needs. Several of the findings and emergent themes merit further discussion.

Are coyotes an issue?

Most interviewees were not only aware of coyote presence in Westchester County, but also had seen a coyote. In fact, nearly half actually had what they called a “close” interaction with a coyote. Despite this ubiquitous familiarity among informants, it was the opinion of most of these individuals that the vast majority of Westchester residents are not aware of coyote presence and have little to no knowledge about coyotes.

Recall that our sample of informants was not randomly identified. In addition to residents who had encountered coyotes, we spoke with people who, by virtue of their professional work, are called upon to engage in community issues related to coyotes: animal wardens, town officials, park staff, environmental educators, and police officers. While many of these community members noted an increase in telephone calls they received about coyotes and elevated local media coverage of coyote issues, they nevertheless expressed the belief that coyotes were not a major issue for the Westchester community at large. In forming this view, informants did not discount the fact that some individuals did have problems with coyotes. It was acknowledged that residents who had a negative experience with a coyote might view the animals as an issue. Most informants asserted, however, that the number of individuals with this experience was too low relative to the Westchester population to permit coyotes to be classified as an “issue” for the community. As discussed earlier, some of our interviews included people who had reported a negative coyote encounter and perhaps felt that coyotes were an issue. Yet even most of these individuals viewed their experience as unique and unlikely to occur for the remainder of the Westchester population.

The lack of issue status described by interviewees particularly caught our attention because initial interest in this project occurred as a result of the number of reports of coyote-related incidents the DEC received from the Westchester region. The frequency and nature of these calls caused the DEC to have a certain degree of concern about human responses to coyotes in the area. Yet, according to the informant interviews, the Westchester community hardly notices coyote presence, let alone views it as a problematic issue. This idea merits further exploration during the quantitative portion of our inquiry to determine whether a random sample of residents affirm informants’ belief that coyotes are not an issue of concern on a broad scale.

An exurban orientation?

Perhaps one context in which to understand the informants’ belief that the community lacks awareness and knowledge of coyotes is to consider the composition of the human population in Westchester. Many people in Westchester moved into the area from urban centers, typically New York City (Spectorsky 1955). This occurred as individuals sought a more “rural” lifestyle, lower cost of living, more living space, and/or a variety of other amenities associated with an exurban setting. Regardless of the reason, urbanites bring to Westchester a perspective that is perhaps unique from those residents who were born and/or raised in the area (Brown 2002). As a consequence of their urban lifestyle, these newer Westchester residents may be unaccustomed to living near, and interacting with, wildlife. Indeed, many interviewees directly referenced newer, exurban residents when describing the “mentality” of the community.

It is possible that these individuals largely contribute to the lack of community awareness and knowledge that our informants referred to so frequently.

If informants' opinions about Westchester's exurbanite population and their lack of wildlife experiences are correct, it may also set the stage for coyote presence to become an issue of concern in the community after awareness increases. Any lack of familiarity with coyotes is likely to impact exurbanites' perceptions of, and reactions to, encounters with these animals. If residents are unfamiliar with the effects of coexisting with coyotes, they are likely to have a higher perception of risk (Slovic 1987). Additionally, this perception of risk could influence their response to interactions with coyotes (Ajzen and Fishbein 1980) thereby allowing coyote presence to develop into a community issue. Again, this is something many of our informants alluded to during interviews. Interviewees suggested that newcomers have a lot of fear and anxiety about coyotes, believe coyotes do not belong in Westchester, are not tolerant of coyotes, and are more likely to demand large-scale removal efforts if they experience a negative encounter.

Informants described a situation wherein coyote presence has the potential to balloon into a significant issue if awareness does increase. This perhaps could help us to understand the context of the DEC's concerns about this topic. Residents who are aware of coyote presence and contact the DEC could be members of this exurbanite subpopulation that may perceive greater risk and therefore express more concern to the agency. Additionally, it may be the case that community awareness or experience has not yet reached a level at which coyotes have evolved into a major issue. If our informant perceptions of the exurban community orientation are correct however, the possibility certainly exists for coyotes to become an issue of concern for the community if interactions increase, or interactions with serious negative consequences occur.

IMPLICATIONS FOR FUTURE RESEARCH

Our findings indicate that a coyote-focused inquiry may be particularly topical at this time. It is evident from our results that while the DEC and the majority of our informants have divergent perceptions of the current coyote-related climate in Westchester, the two perspectives are not mutually exclusive. The bottom line appears to be that Westchester County, as an example of a NYS suburban community, may be primed for coyote presence to become a contentious public issue.

A follow-up survey will allow us to explore assumptions about Westchester residents and give us insight into the experiences and perceptions of community members on a broader scale. An interesting caveat to bear in mind is that many of our informants saw themselves as unique from the rest of the Westchester population. When describing the general attitudes they perceived in their community, many referred to a distinct group of exurbanites as the source of both the lack of community awareness as well as any community-level concern that did exist about the issue. Many informants actually alluded to the fact that these exurbanites could be the very people that cause any problems that do occur with coyotes. Interviewees believed that "city people's" lack of understanding not only fed into anxiety about coyote issues, but also poor human behaviors and decision making that could directly lead to problems. Due to the level of

emphasis our informants placed on this issue, we will include measures in the survey that will explore the possibility of a connection between place of childhood residence, tenure in Westchester, and awareness and attitudes about coyotes.

LITERATURE CITED

- Ajzen, I., and M. Fishbein. 1980. Understanding attitudes and predicting social behavior. Prentice-Hall, Englewood Cliffs, New Jersey.
- Babbie, E. 2003. The Practice of Social Research, 10th ed. Wadsworth, Belmont, California.
- Brown, D. L. 2002. Migration and community: Social networks in a multilevel world. *Rural Sociology* 67(1):1-23.
- Fener, H. M., J. R. Ginsberg, E. W. Sanderson, M. E. Gompper. 2005. Chronology of range expansion of the coyote, *Canis latrans*, in New York. *Canadian Field-Naturalist* 119(1):1-5.
- Gompper, M. E. 2002. Top carnivores in the suburbs? Ecological and conservation issues raised by colonization of northeastern North America by coyotes. *BioScience* 52(2):185-190.
- Howell, R. G. 1982. The urban coyote problem in Los Angeles county. Pages 21-23 in R.E. Marsh (ed.), *Proceedings, Tenth Vertebrate Pest Conference*, University of California Davis.
- Kellert, S. R. 1985. Public perceptions of predators, particularly the wolf and coyote. *Biological Conservation* 31(2):167-189.
- McNay, M. E. 2002. Wolf-human interactions in Alaska and Canada: A review of the case history. *Wildlife Society Bulletin* 30(3):831-843.
- Parker, G. 1995. Eastern coyote: The story of its success. Nimbus Publishing Ltd, Halifax, Nova Scotia.
- Pendall, R. 2003. Sprawl without growth: The upstate paradox. Brookings Institution Center on Urban and Metropolitan Policy, Washington, D.C.
- Putnam, M. 2006. Personal communication to H. Wiczorek Hudenko June 9. New Paltz, New York.
- Slovic, P. 1987. Perception of risk. *Science* 236(4799):280-285.
- Spectorsky, A. C. 1955. *The Exurbanites*. Lippincott, Philadelphia, Pennsylvania.
- Stevens, T. H., T. A. More, and R. J. Glass. 1994. Public attitudes about coyotes in New

England. *Society and Natural Resources* 7 (1):57-66.

Timm, R. M., R. O. Baker, J. R. Bennett, and C. C. Coolahan. 2004. Coyote attacks: An increasing suburban problem. *Transactions of the North American Wildlife and Natural Resources Conference* 69, Spokane, Washington.

Wieczorek Hudenko, H., W. F. Siemer, and D. J. Decker. in review. In S. D. Gehrt, S. P. D. Riley, & B. L. Cypher (Eds.), *Urban Carnivores: Ecology, Behavior, Conflict, and Conservation*. Johns Hopkins University Press, Baltimore, Maryland.

APPENDIX A: NEW YORK SUBURBAN COYOTE STUDYSTAKEHOLDER INTERVIEW GUIDE

Thank you for taking the time to meet with me today, I appreciate your willingness to participate in our study. If you'll recall, the purpose of this interview is to discuss topics related to the presence of coyotes in suburban areas.

I would like to use this digital voice recorder to record our interview to help me identify the most important points of our discussion today. But if you prefer, I can take notes instead. What would you be comfortable with?

Your participation in this interview is entirely voluntary. You may choose to end the interview at any point or decline to answer any questions that make you feel uncomfortable.

Introduction

- 1) How long have you lived/worked in _(town name)_?
 - a) what are your responsibilities?
- 2) What would you say the area is like? (rural, urban, suburban)
- 3) (if employee) Where do you live?
 - a) what is that area like?
- 4) Where are you from originally?

Knowledge of coyotes

- 5) How/why did you know about the presence of coyotes in this area?
- 6) How do you learn about coyotes?
 - a) do you have conversations with friends/family about coyotes?
 - b) do you read about coyotes in the newspaper?
 - c) have you ever been to a museum/nature center/workshop where you learned about coyotes in the northeast?
 - d) have you ever seen information about coyotes from the NYS Department of Environmental Conservation?
 - e) what other ways/from what other sources do you learn about coyotes? (TV, radio, magazines, etc.)
 - f) do you seek information about coyotes?

Coyotes in the community

- 7) When people talk about coyotes in your community, what kind of topics are discussed?
 - a) do you feel that coyotes are an "issue" in your community?
____YES
 - i) why/how/for whom?
____NO
- 8) How are coyote concerns handled in your area?
 - a) how do you think they should be handled?

Experience with coyotes

- 9) Have you ever seen a coyote?
____YES
 - a) when?
 - b) where?
 - c) what did it do?
 - d) what did you do?
 - e) how often has this occurred?
____NO
 - f) have you seen evidence of their presence near your home/neighborhood?
- 10) Have you ever had a close encounter with a coyote?

- ___ YES
- a) what happened? (sighting or interaction)
 - b) what did you do?
 - c) what did the coyote do?
 - d) how often has this occurred?
 - e) would you respond differently next time?
- ___ NO
- f) what do you think an encounter with a coyote would be like? (positive or negative)
 - g) how do you think you might act if you had an encounter with a coyote?
- 11) Do you know anyone who has had an encounter with a coyote?
- ___ YES
- a) did they describe it to you? would you share their story with me?
 - b) do you think they viewed the encounter as positive or negative?
- ___ NO
- 12) Based on your experience, and what you have heard from friends, family or the media, do you think that the frequency or nature of human/coyote encounters has changed over time?
- ___ YES
- a) over what time period has this change occurred?
- ___ NO

Attitudes/beliefs toward coyotes

- 13) How do you feel about the presence of coyotes in your neighborhood?
- a) in residential areas?
 - b) in suburban areas?
 - c) anywhere?
 - d) do you think that others share this perspective?
- 14) How do you think a coyote should behave around a person/people?
- a) is it your understanding that this is what typically happens?
- 15) What do you think causes encounters between humans and coyotes?
- a) is there anything that people do that can increase or decrease the likelihood of an encounter?
(intentional/unintentional feeding, scare techniques)
increase:
decrease:
- 16) How likely do you think an encounter with a coyote is?
- a) who is responsible for encounters between humans and coyotes? (individuals, communities, agency, coyotes?)
 - b) do you feel like you have the ability to control your exposure to coyotes?

Impacts

- 17) What are the effects/impacts of the presence of coyotes in suburban areas? (ecosystem, people...)
- a) are these positive or negative?
 - b) of human/coyote interactions?
 - c) are these positive or negative?
 - d) why?
 - e) what are the benefits/concerns associated with these possible outcomes?

Conclusion

- 18) Is there anything else you would like to share about your experiences with or interests in coyotes?
- 19) Is there anything you would like to ask me?
- 20) Do you know of anyone else who might offer a perspective on this issue and/or who may be interested in participating in the study?
- a) do you think this person's perspective will be similar or different from your own?
 - b) can I tell them you referred me?

Thank you again for taking the time to participate in our study. Here is my contact information should you have any questions or comments about your participation in our study.