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Outdoor cats: Identifying differences between stakeholder beliefs, perceived impacts, risk and management

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ABSTRACT

Conflict over the management of outdoor cats has contributed to debate between animal welfare and wildlife advocates and stymied efforts to control outdoor cats. We distributed a mail survey to a random sample of participants in Trap-Neuter-Return programs for outdoor cats, Audubon Society members and the public across four counties in Florida ($N = 1363$) to identify differences between these stakeholders' perceptions and support for the management of outdoor cats. We used a perception of risk framework to evaluate group differences in attitudes and beliefs about outdoor cats, perceptions of positive and negative impacts, ecological risk perceptions, and support for management options. Multivariate Analysis of Variance results indicated significant differences between groups across all of our measured scales. Discriminant Function Analysis helped identify two distinct groups; explaining 79% and 21% of the variance between groups. Group membership was predicted by cat ownership, attitudes toward and beliefs about outdoor cats, perceived impacts, risk perceptions, and management attitudes. This research is the first to explore differences in cognitions and preferences related to outdoor cat management with three important stakeholder groups. To reduce response bias, our survey included both positive and negative impact items and neutral terminology. Our findings suggest that surveys, based solely on public opinions about outdoor cats, do not reflect the diversity of opinion of all relevant stakeholder groups.

1. Introduction

The management of outdoor domestic cats (*Felis catus*) has often been portrayed, in the popular media (Clark, 2011; Gorman, 2003; Pittman, 2003) and the scientific literature (Loyd and Hernandez, 2012; Peterson et al., 2012), as a debate between environmental groups and animal rights/advocacy groups over their perceptions of outdoor cats and support for cat management methods. The majority of "bird conservation professionals" agree that feral cats contribute to the decline of native birds (Peterson et al., 2012). The potential risk cats present to wildlife and ecosystems is often cited by bird advocates and conservation organizations as a reason to remove cats from natural systems using lethal or non-lethal methods (Drennan, 2012; Williams, 2009). One strong advocate of this position is the US-based National Audubon Society, a bird and conservation advocacy organization that encourages its more than 40,000 members to oppose free-roaming colonies of cats. The Audubon Society has criticized non-lethal methods, such as Trap-Neuter-Return (TNR), which involve trapping the cat, spaying or neutering it, and then returning the cat to its original location, for not eliminating wildlife predation or reducing cat colonies effectively (National Audubon Society, 2013; Drennan, 2012).

In contrast, cat advocates support the use of non-lethal methods to control the cat population (Peterson et al., 2012). Cat advocates claim that critics exaggerate the risks to wildlife from cat predation (Barratt, 1997), perceive significant benefits from outdoor cats (Centonze and Levy, 2002; Levy and Crawford, 2004) and support policies that protect outdoor cat colonies (Alley Cat, 2009). More than two hundred non-profit organizations are dedicated to TNR in the US (Alley Cat, 2009).

This study contributes significantly to the cat management debate because it is the first to explore differences in attitudes, beliefs and perceptions that divide three important stakeholder groups who can influence cat management support (i.e., TNR supporters, Audubon Society members and the general public). This study thus

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provides a fuller context of the dynamics underlying the debate over outdoor cats in the US.

TNR advocates and Audubon Society members are examples of active stakeholders in the cat management debate. Stakeholders are defined as people who affect or are affected by an animal species or management issue (Decker et al., 2001; Freeman, 2010). Stakeholders have the power to influence management outcomes (Reed et al., 2009) through their support for program goals (Ford-Thompson et al., 2012) and management objectives (Decker et al., 1996). Conflict between stakeholder groups and wildlife managers over management interventions can result in legal action against wildlife agencies, citizen ballot initiatives, delayed management action, and increased tension between managers and stakeholders (Chase et al., 2000; Manfredo, 2008; Perry and Perry, 2008). In a study among university undergraduate students, support for cat management was found to be influenced by attitudes about cats and perceptions of the ecological risks cats pose to wildlife and the environment (Wald and Jacobson, 2013). Therefore, it is critical to identify differences in ecological risk perceptions, attitudes and beliefs among stakeholders that may influence the success of cat management strategies.

This research utilizes an ecological risk perception framework to explore areas of conflict and agreement between three stakeholder groups (i.e., TNR supporters, Audubon Society members and the public). Ecological risk perception is a measure of the perceived threat to the health and productivity of individual species, communities, environmental processes and the ecosystem (McDaniels et al., 1997). Ecological risks have previously been studied with regard to human activities and their negative impact on ecosystems (e.g., clear-cutting in forests, air pollution) (Cavanagh et al., 2000; McDaniels et al., 1997; Williamson et al., 2005). A number of studies have looked at stakeholder perceptions of the ecological risk posed by invasive species (Fischer and Charnley, 2012; García-Llorente et al., 2008; Gozlan et al., 2013; Vanderhoeven et al., 2011). Perceived risk can influence stakeholder tolerance for animals (Riley and Decker, 2000), attitudes toward wildlife management (Agee and Miller, 2009; Kneeshaw et al., 2004) and support for species conservation or eradication (Kellert, 1985). Previous research on wildlife-related risk has primarily focused on individual perceptions of risk to people and property as a result of wildlife damage or human-wildlife conflict (Gore et al., 2005; Riley and Decker, 2000; Thornton and Quinn, 2010). We propose that domestic cats are a unique example of "wildlife," because many stakeholders perceive significant personal benefits associated with them that attenuate perceived ecological risks. This study expands previous work by measuring stakeholder perceptions of both cat-related risks and benefits to people, pets, wildlife and the environment.

Previous research on individual perceptions of cat management and cat-related risk has been based primarily on random samples of the general public (Loyd and Hernandez, 2012; Loyd and Miller, 2010a,b; Peterson et al., 2012) and University staff, faculty and student preference (Ash and Adams, 2003; Tennent et al., in press; Wald and Jacobson, 2013). Few studies have explored perceptions of outdoor cats and cat management among active stakeholders (Peterson et al., 2012).

Relying on public opinion surveys to drive cat management decisions is problematic for several reasons. First, we believe that the majority of the public will hold significantly different perspectives about the management of outdoor cats, compared to active stakeholders. Cat advocates and conservation professionals have strong feelings about outdoor cats (Peterson et al., 2012). We believe that the public may or may not be familiar with the issues associated with outdoor cats. If the topic is not salient for the majority of the public, individuals may hold more neutral attitudes about outdoor cats and cat-related risks and may not have a strong preference for cat management. This also may result in responses influenced by social pressure or result in the reporting of pseudo-opinions, rather than true opinions about the issue (Berinsky, 1999; Bishop et al., 1980).

Previous research related to the potential impacts associated with outdoor cats has primarily been sponsored by wildlife/environmental organizations, used negative terminology about cats and described negative impacts to wildlife or risks to people as part of the survey (e.g., (Dabritz et al., 2006; Grayson et al., 2002; Loyd and Hernandez, 2012; Loyd and Miller, 2010a,b; Peterson et al., 2012). This is of concern, because survey terminology, the use of persuasive communication or biased framing can influence responses (Smith, 2012), change attitudes (Converse, 1970), and pressure respondents into providing socially desirable responses to questions about controversial issues (Streb et al., 2008).

The goal of our study was to identify similarities in stakeholder (i.e., TNR supporters, Audubon members and the public) perceptions and support for the management of outdoor cats. Our specific objectives were to measure and evaluate stakeholder (1) attitudes and beliefs about outdoor cats, (2) perceptions of cat impacts and ecological risk perceptions, and (3) attitudes about cat management strategies. The fourth objective uses Discriminant Function Analysis to (4) identify the best combination of variables that predicted stakeholder group membership.

2. Methods

We identified ten active TNR organizations across Florida, conducting regular and ongoing spay-neuter initiatives, with large participant lists. From this list, we contacted stakeholders in seven counties that included both active TNR groups and Audubon chapters. Organizations (both TNR and Audubon groups) in four counties agreed to participate in this research. Sample size estimates were determined a priori assuming 95% power at an alpha of 0.05.

2.1. Sample design and survey administration

Stakeholders were randomly selected from existing participant lists for TNR organizations and Audubon chapters in all four counties, and a randomly selected public sample was purchased from Infogroup USA. Questionnairs were sent to a randomly selected sample of participants (TNR ($n = 800$), etc). Survey protocol followed Dillman's four-wave tailored design method for mail surveys, including a pre-notice letter, survey, reminder postcard and follow-up survey (Dillman, 1999; Dillman et al., 2009). Materials were distributed in two-week intervals from Autumn 2012 through Autumn 2013.

One concern associated with survey research is that respondents may differ from the population or sample of which they are a member and that these differences may significantly influence survey results (Vaske, 2008). Non-response is important in cases where survey participation is related to the variable underlying the estimate (Groves and Peytcheva, 2008). Non-response bias checks (comparing respondents to non-respondents) on the variables of interest can address this issue.

Non-response bias checks were performed for all three stakeholder groups. We contacted public non-respondents with valid phone numbers by telephone ($n = 216$) (12%). We compared public respondents and the initial non-respondents on four demographic items, previously identified as important predictors of management support. Compared to non-respondents, public respondents were more likely to be female ($\chi^2 = 6.68$, $p = <0.01$), more likely to own cats ($\chi^2 = 4.23$, $p = <0.05$) and less likely to feed outdoor cats ($\chi^2 = 5.73$, $p = <0.05$), but there were no significant differences in outdoor access for owned animals. We also compared public