

## The Role of Ethical Judgments Related to Wildlife Fertility Control

T. BRUCE LAUBER AND BARBARA A. KNUTH

Human Dimensions Research Unit, Department of Natural Resources,  
 Cornell University, Ithaca, New York, USA

JAMES A. TANTILLO AND PAUL D. CURTIS

Department of Natural Resources, Cornell University, Ithaca,  
 New York, USA

*Certain species of wildlife cause considerable damage and therefore receive management attention. Traditional management methods rely on lethal control, but fertility control is increasingly being advocated as a more humane alternative. Because wildlife management decisions are influenced by citizen input, it is important to understand what makes people support or oppose lethal control and fertility control. We studied six U.S. communities trying to manage large populations of white-tailed deer or feral cats and categorized the ethical arguments citizens used to support their positions on lethal and fertility control methods. We identified two broad categories of ethical arguments. Arguments in the “obligations to people” category focused on (1) decision-making procedures, (2) public policy decisions, and (3) management outcomes. Arguments in the “obligations to animals and the environment” category focused on (1) life, suffering, and death, (2) altered characteristics of animals, (3) individuals and communities, and (4) invasive species impacts.*

**Keywords** contraception, deer, ethics, feral cats, fertility control, sterilization, urban/suburban wildlife

Managing human–wildlife conflict is a public policy challenge. Species as varied as feral cats (*Felis catus*), white-tailed deer (*Odocoileus virginianus*), black bears (*Ursus americanus*), and cormorants (*Phalacrocorax auritus*) can cause problems when present in large numbers, particularly when in close proximity to urban or suburban areas. The impacts of species such as these on the American public are considerable. Wildlife-related damage to agriculture may cause up to \$500 million in losses annually (Conover 1997). An estimated 1,500,000 deer–automobile collisions occur each year, leading to \$1 billion in damage, 29,000 human injuries, and 200 human fatalities (Conover 1997). Approximately 23,000 new cases of Lyme disease were reported

Received 8 November 2004; accepted 13 February 2006.

This material is based on work supported by the National Science Foundation under grant SES-0217095.

Address correspondence to T. Bruce Lauber, Human Dimensions Research Unit, Department of Natural Resources, Cornell University, Fernow Hall, Ithaca, NY 14853-3001, USA. E-mail: TBL3@cornell.edu

in 2002, with deer playing a role in transmission (Division of Vector-Borne Infectious Diseases 2004).

The severity of these problems makes wildlife population control a priority in affected communities. Many traditional population management methods rely on lethal control—trapping and euthanizing animals, hunting, culling, etc. In recent years, however, fertility control has been advocated in some cases by residents of communities seeking relief from animal problems. And some communities are using fertility control experimentally, because lethal control either is not technically possible (e.g., where firearm use is limited or prohibited) or is not socially acceptable (Lauber and Knuth 2000; Crawford and Levy 2004; Lauber et al. 2004). Fertility control in mammals includes three basic methods:

- *Sterilization* involves trapping and permanently altering animals (Merrill et al. 2003).
- *Immunocontraceptive drugs* prevent pregnancy (Curtis et al. 2002). *Gonadotropin-releasing hormone antagonist* (GnRh) interferes with the production of reproductive hormones. *Porcine zona pellucida* (PZP) blocks fertilization of eggs by sperm.
- *Prostaglandins* are abortion agents that terminate pregnancy (DeNicola et al. 1997).

The decision to implement lethal control or fertility control is often controversial. Proponents of fertility control consider it a more humane alternative to killing animals. Lethal control is often advocated by those who think fertility control is ineffective or too slow. Debates about these issues are acrimonious and characterized by both technical and ethical disputes (Lauber and Knuth 2000). Ethical disputes are particularly difficult to address because some people view ethical judgments as subjective and therefore not open to reasoned discussion.

Philosophers, however, have articulated problems with the view that ethics are solely subjective (Candelaria 1994). They argue that such a view leaves no reasoned way to settle disputes about what behaviors are moral—that “mistakes about values are impossible to make” (p. 838). If ethical judgments are exclusively subjective, one could always follow one’s inclinations and remain ethical. This viewpoint seems inconsistent with our commonsense view of the world because most people accept that certain behaviors can be right or wrong.

If ethical judgments can be open to reasoned discussion, understanding the foundation of these judgments is important because of their implications for public policy. Ethical reasoning influences people’s views about the acceptability of management programs. Public opinion about management programs influences public policy. Good public policy therefore depends on well-informed opinions about the implications of various management options (Lauber and Knuth 1998; Lauber et al. 2002). Helping cultivate well-informed opinions depends in part on understanding the ethical arguments that support those positions. Little research has been conducted to date that contributes to this understanding.

In this study, we explored the ethical arguments associated with people’s opinions about wildlife fertility control and other management options and assessed the implications of these arguments for public policymaking. We focused on two species with different biological characteristics and different relationships with humans: white-tailed deer and feral cats.

White-tailed deer are native to North America but were nearly exterminated in the United States by the early 1900s. Over the last century, deer gradually recovered, and by the late 20th century, they began to be associated with problems: crop and

property damage, deer–vehicle collisions, the transmission of Lyme disease, and ecosystem damage (Conover 1997). These problems have been particularly difficult to address in urban and suburban communities where deer populations could grow quite large, but where deer hunting is often either impractical or unacceptable. Various nontraditional management options have been advocated in urban and suburban areas, and fertility control methods are some of the most prominent of these.

The domestic cat has been associated with humans for centuries (Serpell 1988). Lost or abandoned pets often breed prolifically and form self-sustaining populations of feral cats. Concerned individuals may feed feral cats, resulting in concentrated cat colonies (Liberg and Sandell 1988). Nuisance problems attributed to cat colonies include spraying and yowling, disease transmission, and predation on wildlife (Patronek 1988; Zaunbrecher and Smith 1993). The traditional approach to managing feral cats has been to trap and kill them. Trap–neuter–return (TNR) programs (Zaunbrecher and Smith 1993), in which cats are trapped, surgically sterilized, and returned to where they were captured, are being increasingly advocated and practiced. Caretakers sometimes “manage” colonies by feeding and monitoring the cats in them (Zaunbrecher and Smith 1993).

### Theoretical Background

Exploring ethical judgments was the focus of this study. Philosophers define ethical judgments as one type of normative judgment. From a philosopher’s perspective, normative judgments focus on what states are more desirable than others. Ethical judgments specifically focus on questions of right and wrong, including questions of whether others are being harmed (Frankena 1973).

Understanding the ethical judgments people make is important because these judgments influence attitudes and behaviors—in particular, whether people support or oppose public policies (e.g., the use of particular methods to manage deer or feral cats). The mechanisms through which they influence attitudes and behaviors can be clarified by existing social science theory.

The *theory of reasoned action* (TRA) (Fishbein 1967; Ajzen and Fishbein 1980) has been used to explain a variety of behaviors, including support for natural resource policies (Bright et al. 1993; Pate et al. 1996; McGlincy 1997; Whittaker et al. 2001; Dougherty et al. 2003). These studies have postulated that a person’s behaviors to support or oppose a particular public policy (e.g., by speaking out in support of the policy at a public meeting) are influenced by beliefs about the outcomes to which the policy will lead (e.g., the belief that TNR will reduce cat populations) and attitudes about those outcomes (e.g., reducing cat populations is good).

Fulton et al. (1996) described how attitudes are ultimately rooted in values. Values are “abstract cognitions that are concerned with . . . desirable end-states and modes of conduct” (p. 27). Values are few in number, represent core concerns, and are resistant to change. Although they are general in nature and do not apply to specific situations, they serve as the basis of a wide variety of attitudes that do apply to specific situations. Serving as intermediaries between specific attitudes toward management policies and the fundamental values that underlie these attitudes are multiple levels of progressively more general attitudes.

Where do ethical judgments fit into this hierarchy? We view them as one type of the general attitudes that serve as intermediaries between values and specific attitudes toward management actions. Ethical judgments, such as “killing animals is

wrong” and “protecting native species is right,” have the characteristics associated with attitudes—they are evaluative and they apply to objects. However, they are concerned with a particular type of evaluation—judgments about what is right and wrong—rather than just good and bad or desirable and undesirable.

The role that ethical judgments play in determining specific attitudes toward management policies is not simple, however. As Fulton et al. (1996) made clear, general attitudes (and more specifically, ethical judgments) may be part of a hierarchical chain. For example, a person may judge that protecting native species is right. This ethical judgment may contribute to another judgment that controlling feral cats is right. This judgment in turn may contribute to the judgment that it is right to use management methods that effectively control feral cats (to ultimately protect native species) and wrong to use methods that are ineffective.

Furthermore, most people have ethical judgments that sometimes conflict. A person may judge that protecting native species is right and therefore be inclined to favor effective feral cat control. The same person, however, may judge that killing animals is wrong and therefore be inclined to oppose management methods that involve killing feral cats. These judgments may conflict if that person concludes that killing cats is necessary to control feral cats and protect native species. Which judgment has a greater influence on the person’s attitudes toward specific management actions may depend on the relative strengths of these judgments.

The applicability of ethical judgments to any situation is also influenced by beliefs. A person may judge that protecting native species is right, but this judgment only influences more specific attitudes toward feral cat management if the person also believes that feral cats harm native species. If the person holds this belief, that person may also conclude that reducing the number of feral cats is important. The beliefs held about the effectiveness of different cat management methods will then contribute both to ethical judgments and specific attitudes about these methods. However, it is generally recognized that only salient beliefs—or beliefs that an individual readily associates with an object or activity—influence attitudes (Ajzen 1989; Fishbein and Manfredo 1992). Therefore, a belief that feral cats harm native species only influences attitudes toward feral cat management if a person readily sees the relationship between this belief and feral cat management.

In this study, we explored the ethical judgments that influenced support for fertility control and other management methods for deer and feral cats. We considered how these judgments were interrelated, which may be in conflict, and how information could influence the way these judgments determine attitudes toward management actions. Our study led to recommendations for how public policy education targeting attitudes toward wildlife management programs can be informed by an understanding of ethical judgments.

## Methods

We conducted our research in six urban or suburban communities. We selected study sites in which the management of white-tailed deer or feral cats was an important concern; surgical sterilization and/or chemical contraception had been publicly discussed, tested, and/or used as a management option; and the management of deer or feral cats was controversial.

The deer management sites were Princeton, NJ; Hilton Head, SC; and Highland Park, IL. The feral cat management sites were Atlantic City, NJ; Gainesville, FL;

and San Francisco, CA. Multiple sites were included to increase our ability to transfer our findings to other settings (Greenwood and Levin 1998). Findings replicated at most sites were considered more robust.

Forty-nine stakeholders (between 5 and 11 from each site) were interviewed in person. Twenty-nine were involved in feral cat management issues and 20 were involved in deer management issues. Twenty-eight were generally supportive of fertility control and 21 were generally opposed. Potential interviewees were identified using snowball sampling (Seidman 1998). Key informants at each site suggested potential interviewees who they knew were interested or involved in deer or feral cat management, but who did not necessarily hold the same perspective on management. Each person recommended was asked to suggest others. We continued this process until we had a sufficiently diverse pool of potential respondents, in terms of the range of perspectives likely to be encountered (Seidman 1998). Interviewees comprised concerned residents, representatives of nongovernmental organizations, local government officials, and state and federal agency staff members.

When recruiting interviewees and at the beginning of each interview, we explained that the purpose of the study was to help us understand what people think about using fertility control to manage deer and feral cats—that we wanted to know whether people think using fertility control to manage wildlife is right or wrong, and why they think so. Interviews included a series of open-ended questions addressing topics specified in an interview guide (Seidman 1998). After a brief description of the research project, respondents were asked:

- How ethically acceptable do you think it is to use fertility control to reduce problems caused by deer/feral cats in your community?
- What reasons do you have for thinking that fertility control is ethically acceptable/not acceptable?
- If you were trying to convince someone else that fertility control was the right thing to do (or “the wrong thing to do”—depending on the answer to earlier questions), what reasons would you give to try to show this?

The initial question was used to evoke descriptions of specific attitudes toward fertility control, while the second and third questions evoked descriptions of underlying attitudes (including ethical judgments) and beliefs that contributed to these specific attitudes.

Depending on the answers to these questions, certain *probing questions* were asked to encourage respondents to elaborate on their underlying attitudes and beliefs. For example, if respondents referred to concepts such as “wildness,” “the balance of nature,” or “animal rights” to explain their position about fertility control, they were asked to describe what these concepts meant to them and the relationship between these concepts and fertility control.

After allowing respondents to discuss those ethical considerations that occurred to them initially, we asked a series of follow-up questions about potential ethical issues that might or might not be salient to respondents. For each follow-up question, we provided a few sentences of information before asking the question. The topics of these follow-up questions were: (1) whether achieving fertility control through surgery or drugs was preferable; (2) what kinds of negative side effects of fertility control on animals were acceptable; (3) to what degree a lowered quality of life was acceptable for animals treated with fertility control; (4) whether the effectiveness of fertility control at reducing deer/feral cat populations was an important

concern; (5) whether the impacts of management methods on human safety were important concerns; (6) whether the cost of fertility control was an important concern; and (7) whether fertility control was more acceptable for some species than for others. These questions prompted respondents to describe attitudes and beliefs that they might have neglected to mention initially.

The interview guide was adhered to loosely; the particular order in which these topics were covered varied for respondents according to their perspectives, the role they played in deer or feral cat management, and their communication style(s) (Seidman 1998). Throughout the interviews, respondents tended to compare fertility control to other management methods, and we encouraged them to make these comparisons.

Interviews were recorded if respondents allowed it. Seven interviews were transcribed. The interviews chosen for transcription were considered to be information-rich (in that respondents elaborated on the ethical considerations that influenced their judgments), and they collectively covered a diverse array of ethical topics. The transcripts were coded, broken into meaningful segments (sentences or paragraphs), and assigned to descriptive categories focusing on the types of ethical arguments they contained (Miles and Huberman 1994). The product of this analysis was a category system describing the variety of ethical arguments offered by respondents. After the seven transcripts had been coded, the remaining 42 recordings were reviewed to identify additional categories of ethical arguments that had not been identified in the transcripts. These arguments were added to the category system.

The development of a category system improved the ease and quality of data interpretation. Using Folio Views for Windows 4.3, we compared the ethical arguments offered by supporters and opponents of wildlife fertility control and by stakeholders involved in deer and feral cat issues. We compared both (1) the particular categories of arguments offered by each type of stakeholder, and (2) the specific arguments included in each category for each type of stakeholder.

## Results and Discussion

Ethical arguments focus on states or conditions that people judge to be morally better or worse. A complete categorization of ethical arguments we encountered during our interviews is provided in Tables 1 and 2. We identified arguments focusing on two sets of concerns: (1) obligations to people (Table 1), and (2) obligations to animals and the environment (Table 2). Each set included a number of specific states of concern that were relevant to the use of wildlife fertility control and other management options.

Arguments in the “obligations to people” category were organized into three groups focusing on (1) decision-making procedures, (2) public policy decisions, and (3) management outcomes. Most of these arguments were concerned with standards for public policy and were not specific to the management of deer and feral cats. Arguments in the “obligations to animals and the environment” category were organized into four groups, focusing on (1) life, suffering, and death, (2) altered characteristics of animals, (3) individuals and communities, and (4) invasive species impacts, and were more specific to issues involving wildlife and other animals.

The ethical arguments we documented were varied and nuanced. It is beyond the scope of this article to describe the full extent of these arguments. Instead, we discuss key points of contrast in the arguments offered by (1) supporters and opponents of

**Table 1.** Ethical concerns addressing obligations to people

Concerns	Description
<b>Decision-making procedures</b>	
Adequate Information	Basing public policy decisions on adequate and correct information
Appropriate Process	Use of appropriate procedures for making public policy decisions
Stakeholder Involvement	Involvement of interested and affected stakeholders in public policy decision making
Neutrality of State	Neutrality of government agencies making management decisions
<b>Public policy decisions</b>	
Effectiveness	Effectiveness of management actions
Public acceptance	Acceptability of public policy decisions to the public
Balanced policy	Degree to which public policy decisions address the concerns of all key stakeholders
Resources	Money or other resources spent on management
Equity	Equitable distribution of costs of achieving public policy objectives
<b>Management outcomes</b>	
Health and safety	Adverse impacts of management actions on human health or safety
Animal use	Use of animal products from animal control operations
Human development	Moral (or other) development of people

**Table 2.** Ethical concerns addressing obligations to animals and the environment

Concern	Description
<b>Life, suffering, and death</b>	
Quality of life	Suffering and quality of life of animals
Killing	Killing animals
Sport hunting	Hunting animals for recreation or food
<b>Altered characteristics of animals</b>	
Behavior	“Normal” animal behavior
Wildness	Wildness of animals
<b>Individuals and Communities</b>	
Individual animals	Protection of individual animals
Species	Protection of native species
Ecosystems	Protection of ecosystems
<b>Invasive Species Impacts</b>	
Predation	Predation by cats on other animals
Cats outdoors	Existence of cats outdoors

fertility control and (2) stakeholders involved in deer and feral cat issues, focusing on selected categories from Tables 1 and 2.

### *Supporters and Opponents of Wildlife Fertility Control*

A clear correspondence did not exist between the concerns listed in Tables 1 and 2 and support for or opposition to fertility control. Although some concerns tended to be held primarily either by those who supported or those who opposed fertility control, others were widely shared. However, respondents with different perspectives sometimes differed in their judgments about the relative importance of the concerns that they shared or in their judgments about the management contexts in which those concerns were relevant.

*Killing.* Although both supporters and opponents were concerned about killing animals, a point of contrast was the justifications for killing they accepted. Opponents of fertility control were more willing to accept killing animals as a solution to a variety of problems, including property damage, nuisance behaviors, vehicle collisions, disease transmission, and ecosystem damage. While not all opponents agreed on which problems justified killing animals, they often argued or implied that it was reasonable to subordinate the needs of animals to the interests of humans:<sup>1</sup>

A lot of animal rights folks think . . . all life should be equal. And, well yeah, except that I have opposable thumbs and a critical thinking brain that allows me to be above another species. And while I want to respect that species—I'm not trying to be arrogant or anything—there's a reason that I drive a car, live in a house, go to college . . . and a squirrel lives in a tree and eats nuts.

Thus protecting animals from being killed tended to be a lower priority concern among fertility control opponents than choosing actions that were effective at reducing animal-related problems.

Fertility control supporters were much less willing to kill animals to satisfy human interests. Many described their “reverence for life” or the “right . . . to life” of animals. They believed people were too quick to kill animals to solve problems when other options existed:

I just think it's unconscionable nowadays to say: “The best we can do is kill everything and that's a good solution.” What are we in, the twenty-first century now? Surely if we can send people to the moon and beyond, we can do better. And so I would challenge everybody to work towards more creative goals.

Many supporters of fertility control believed killing animals was justified only to alleviate present suffering of the animals, although some accepted killing to solve particular problems after all other options had been thoroughly explored.

*Quality of Life.* The concern for the quality of life of animals includes a wide variety of issues, such as freedom from suffering, access to food, shelter, and other necessities, and the opportunity for enjoyment. Fertility control supporters often identified the quality of life of animals as one of their highest priorities:

So I'm coming back to the suffering... That's my highest priority... I try to live my life as much as possible to minimize the suffering.

Fertility control supporters, however, balanced the concern for suffering against their concern about killing animals and often were more willing than opponents to sacrifice some quality of life in exchange for keeping animals alive:

Some of my interests in trying to find nonlethal ways to control animals is really rooted in the concept that every life is precious. And it offends me a lot that... animal control and wildlife management is largely rooted in the idea that for that animal's interest, we're going to kill him. And I think that there's something horribly sick about that. That the best thing you can offer that animal in the year 2003 is to kill it because it might suffer in the future.

Opponents of fertility control argued that fertility control methods had negative impacts on quality of life. With regard to feral cats, they believed that TNR programs that returned cats to living outdoors resulted in a low quality of life for the cats:

I feel sorry for the cats because... I see a lot of dead cats and I've seen sick cats... One year when a big storm came through...there was no way to get access to where the cat colonies were... There were cats just soaked to the bone... It was one of the most painful things I can remember, hearing cats calling, literally crying. And that really had an impact on me. I thought this is not right... This is not kindness... Are you just prolonging the suffering of these cats by letting them sit outside?

With regard to deer, some people opposed some contraceptive drugs because they interfere with the weight gain and antler development of male deer prior to the breeding season (Miller et al. 2000). Other drugs cause the estrous cycle of female deer to continue longer into the winter, extending the length of the breeding season (Fagerstone et al. 2002). Because breeding behavior is so energetically demanding, this consequence was viewed as a problem:

Sometimes the breeding is pretty violent and so they get more beat up because they are always cycling and they never go through pregnancy... The females keep going through their estrous cycles instead of getting pregnant and then that causes some health problems.

Given these drawbacks of fertility control methods, some opponents argued that lethal methods were more humane.

*Individual Animals versus Ecosystems.* Opponents and supporters of fertility control both expressed concern about "individual animals" and "ecosystems," but prioritized them differently. Fertility control opponents tended to prioritize preserving species and preserving balance within ecosystems:

What I talk about is balance. . .there can be too many of any kind of animal. . . . There's some native animals that there are too many of. So we have to think in terms of balance, in terms of bad animals or good animals. There has to. . .be a reasonable balance between the two and you want to have diversity.

Preserving species and maintaining balance were important to accomplish even if it required sacrificing individual animals—as it might in situations in which large populations of deer or feral cats disrupt the balance of ecosystems.

Fertility control supporters, on the other hand, prioritized caring for individual animals.

I have loved animals since I was a child and always thought we should take care of them. And that as human beings we are put on this earth to nurture and to take care of weaker and lesser species, not destroy them.

Although some supporters also recognized the importance of preserving species, others argued that our society puts too much emphasis on species preservation:

Maybe Mother Nature's just saying: "You know what? Survival of the fittest. For whatever reasons, you're not equipped to make the transformation as society, environment have changed." Maybe we all need to start accepting that.

### ***Deer and Feral Cat Stakeholders***

Although many arguments for and against fertility control were similar for both deer and feral cat issues, other arguments were raised regarding the management of one species, but not the other.

*Wildness.* The status of deer as "wild" animals was important in some arguments regarding the use of fertility control. Fertility control methods that altered the typical appearance or behavior of deer were often viewed as undesirable because they made deer less "wild" and more "domestic":

For them not to grow antlers, for them not to go through the things that they normally would do. . . to me they're not deer anymore. . . . It's like a tiger in a zoo is really not a tiger. . . because he's not doing the natural things that he was put into this world to do. . . his innate nature.

Fertility control leads to changes in cats, too. Behaviors associated with mating—fighting, yowling, and spraying—all decrease when cats are spayed or neutered (Beaver 2003). For cats, however, these changes are seen as an advantage rather than a disadvantage:

Cats live really happily if they are all neutered, and they don't mind that. So we're not really trying to preserve some sort of natural order. We're really returning them more to a pet-like state, which works very well for them as a domestic species.

The status of cats as a domestic species and the status of deer as a wild species, therefore, were important in how people perceived the acceptability of fertility control.

This distinction also influenced how people perceived quality-of-life issues. Some animal welfare advocates argued that fertility control was appropriate for deer but not for feral cats. Both cats and deer were expected to live lives that involved suffering if they were treated with fertility control methods and returned to outdoor, free-ranging existences. Because cats evolved as a species dependent on humans, however, humans were argued to be more responsible for feral cats than for deer. According to this perspective, returning cats to a free-ranging existence was inhumane. Euthanasia was considered a better option.

*Native Species.* The status of cats as a species that evolved in dependence on humans had importance in how the role of cats in ecosystems was perceived. Many fertility control opponents viewed cats as an invasive, nonnative species. While they could accept that deer, as a native species, had an important role in ecosystems (even if deer populations might need to be reduced), cats, as an invasive species, were viewed as not belonging in ecosystems at all and having a lower status than other species:

I don't consider [cats] wildlife. But in form and function they are. In other words, they're free ranging, they reproduce and are sustaining themselves. And so in that sense they are. But I think with the fact that they're feral and the conflicts, their impacts on the other critters that in my opinion do belong there...they don't have a very high status.

Supporters of fertility control found this kind of thinking objectionable. They argued it was inappropriate to value some species more than others:

Some groups are...animal fascists or plant fascists.... The Audubon Society talks about junk birds and good birds. And frogs need to be killed... Cats need to be rid of. It's just like there's only one species we can care about or be concerned about... I just think humans have made such a mess of things on the environment and abandoning animals. We need to take responsibility...for what we've done. And be concerned about all animals.

Furthermore, trying to return ecosystems in North America to their "original" state was argued to be a flawed concept:

It's not Columbus crossing the frigging ocean anymore. It's twenty-first century America and there's a lot of things that have happened in the last five hundred years. And we can't assume that they are bad just because the makeup of species is different than it was five hundred years ago... And that's why I think the nativism is so flawed... It is idiotic to say the world should be a stagnant place... I can feel for biotic diversity... But to fix a point in time and say...we got to go back just seems to me ludicrous.

### ***Common Ground: Public Policy Decisions and Decision-Making Procedures***

We also found similarities in the ethical concerns of supporters and opponents of wildlife fertility control. The most consistent similarities between them addressed standards for public policymaking and public policy decisions—concerns that were not specific to deer and cat issues but could be pertinent to any public policy topic.

One of the most common arguments raised by both supporters and opponents of fertility control had to do with making public policy decisions based on adequate information. Respondents generally believed their adversaries were basing their opinions on faulty information. An opponent of TNR programs for cats argued:

The average politician doesn't know anything about ecology, biology. . . . They don't know who to believe. . . . A lot of the cat information is just baloney, you know, just plain makes no sense at all.

A supporter of TNR programs in the same community maintained:

And when . . . one species is impacting another species, it should be a very high burden of proof if you're going to say because of that we need to take lethal methods against this species. It can't be conjecture. It can't be based on flawed science. . . . We've seen studies where one cat will kill three birds, there's a hundred cats, therefore three hundred song birds are being killed. That kind of stuff.

Although these individuals disagreed on policy specifics, they agreed on standards for policy making. General agreement also existed on points such as involving stakeholders in decision-making, choosing management methods that are effective, and other issues. Even when specific points of agreement did not exist, questions regarding standards for public policy and policymaking tended to be less controversial than questions related to our responsibilities toward animals.

From our perspective, these considerations provide the greatest potential for common ground in these issues. Rather than focusing discussions solely on the treatment of animals and the environment—considerations that are most likely to be controversial and reflect deep-seated (and perhaps stable) ethical beliefs—conversations can occur regarding how society can or should make decisions about controversial issues, such as what process should be followed, who should be involved, and the quality of information used.

### **Conclusions**

Wildlife damage management issues—issues in which animal populations are associated with property damage, threats to human health and safety, environmental damage, or other concerns—are often controversial and value-laden. Choosing management actions to address these issues involves multiple considerations, not all of which are rooted in science (Schmidt 1992). Actions must be feasible to implement. Funding must be available to pay for the actions. And actions must be in accord with collective values about when it is acceptable for “bad things [to] happen to good animals” (Schmidt 1992).

Through this study, we explored factors that influence people's attitudes toward management actions—in particular, the ethical judgments that underlie perceptions as to whether the particular outcomes of management policies are good or bad.

These ethical judgments were varied and complex, including both wide-ranging concerns about humans' relationships with animals and the environment and concerns about standards for public policy and policymaking.

Because of the influence of ethical judgments on attitudes, we believe it would be worthwhile to target ethical issues through public policy education programs. How ethical judgments can be addressed through public policy education is a problem that has not been addressed extensively, and we are aware of few models for how this might occur (but see Hahn 1992). Our results, however, suggest some mechanisms through which it could take place. In many cases, it might not involve changes in values or general attitudes, which are resistant to change, but rather, modification of which general attitudes people think are salient in a given situation, based on the facts of the specific case.

For example, a person who believes that protecting native species is important and that feral cats are a threat to native species may reach the judgment that feral cats need to be controlled. If additional information convinces her that the threat to native species posed by feral cats is overstated, she may change her judgment about the need for feral cat control without ever changing her perspective that protecting native species is important.

Alternatively, a person may support chemical contraception for deer because of a general opposition to killing animals unnecessarily. If additional information convinces him that the side effects of contraception on deer cause suffering for the deer, he may recognize that other general attitudes he holds, such as opposition to causing suffering in animals unnecessarily, apply when he evaluates contraception. If his concern about suffering is greater than his concern about killing, he may change his judgment about the desirability of deer contraception.

Thus, factual information can influence ethical judgments because these judgments are based partially on factual beliefs. Public policy education can therefore potentially refine people's ethical judgments through making available pertinent information, but doing so requires a thorough understanding of the basis for those judgments such as that provided in this study. Whether public policy education can be effective using standard formats for information presentation such as press releases and public presentations remains to be seen. It may be that other mechanisms, such as facilitated discussions between community members, panel presentations or debates by advocates with opposing perspectives, or presentations by philosophers may be better at addressing this need. We believe that additional research could usefully explore the effectiveness of different types of educational strategies on how people apply ethical judgments.

## Note

1. Representative excerpts from interviews are used throughout the "Results and Discussion" section to illustrate findings. Each excerpt was taken from a single interview.

## References

- Ajzen, I. 1989. Attitude structure and behavior. In *Attitude structure and function*, eds. A. R. Pratkanis, S. J. Breckler, and A. G. Greenwald, 241–274. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Ajzen, I. and M. Fishbein. 1980. *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.

- Beaver, B. V. 2003. *Feline behavior: A guide for veterinarians*, 2nd ed. St. Louis, MO: Saunders.
- Bright, A. D., M. Fishbein, M. J., Manfredo, and A. Bath. 1993. Application of the theory of reasoned action to the National Park Service's controlled burn policy. *J. Leisure Res.* 25(3):263–280.
- Candelaria, M. R. 1994. Subjectivism. In *Ethics*, ed. J. K. Roth, 837–838. Pasadena, CA: Salem Press.
- Conover, M. R. 1997. Monetary and intangible valuation of deer in the United States. *Wildl. Soc. Bull.* 25(2):298–305.
- Crawford, C. and J. K. Levy. 2004. Humane strategies for controlling feral cat populations. *J. Am. Vet. Med. Assoc.* 225(9):1–11.
- Curtis, P. D., R. L. Pooler, M. E. Richmond, L. A. Miller, G. F. Mattfeld, and F. W. Quimby. 2002. Comparative effects of GnRH and porcine zona pellucida (PZP) immunocontraceptive vaccines for controlling reproduction in white-tailed deer (*Odocoileus virginianus*). *Reproduction Suppl.* 60:131–141.
- DeNicola, A. J., D. J. Kesler, and R. K. Swihart. 1997. Remotely delivered prostaglandin F<sub>2α</sub> implants terminate pregnancy in white-tailed deer. *Wildl. Soc. Bull.* 25(2):527–531.
- Division of Vector-Borne Infectious Diseases, Centers for Disease Control. 2004. *CDC Lyme disease*. Retrieved September 29, 2004, from <http://www.cdc.gov/ncidod/dvbid/lyme/index.htm>
- Dougherty, E. M., D. C. Fulton, and D. H. Anderson. 2003. The influence of gender on the relationship between wildlife value orientations, beliefs, and the acceptability of lethal deer control in Cuyahoga Valley National Park. *Society Nat. Resources* 16:603–623.
- Fagerstone, K. A., M. A. Coffey, P. D. Curtis, R. A. Dolbeer, G. J. Killian, L. A. Miller, and L. M. Wilmot. 2002. Wildlife fertility control. *Wildl. Soc. Techn. Rev.* 02-2:29.
- Fishbein, M. 1967. Attitude and the prediction of behavior. In *Readings in attitude theory and measurement*, ed. M. Fishbein, 477–492. New York: John Wiley.
- Fishbein, M. and M. J. Manfredo. 1992. A theory of behavior change. In *Influencing human behavior: Theory and application in recreation, tourism, and natural resources management*, ed. M. J. Manfredo, 29–50. Champagne, IL: Sagamore.
- Frankena, W. K. 1973. *Ethics*. Englewood Cliffs, NJ: Prentice Hall.
- Fulton, D. C., M. J. Manfredo, and J. Lipscomb. 1996. Wildlife value orientations: A conceptual and measurement approach. *Hum. Dimens. Wildl.* 1(2):24–47.
- Greenwood, D. J. and M. Levin. 1998. *Introduction to action research: Social research for social change*. Thousand Oaks, CA: Sage.
- Hahn, A. J. 1992. *Resolving public issues and concerns through policy education*. Information Bulletin 214. Ithaca, NY: Cornell Cooperative Extension.
- Lauber, T. B., T. L. Brown, and M. L. Gore. 2004. *Learning by doing: Deer management in urban and suburban communities*. HDRU Series No. 04-2. Ithaca, NY: Department of Natural Resources, College of Agriculture and Life Sciences.
- Lauber, T. B. and B. A. Knuth. 1998. Refining our vision of citizen participation: Lessons from a moose reintroduction proposal. *Society Nat. Resources* 11:411–424.
- Lauber, T. B. and B. A. Knuth. 2000. Suburban residents' criteria for evaluating contraception and other deer management techniques. *Hum. Dimens. Wildl.* 5(1):1–17.
- Lauber, T. B., B. A. Knuth, and J. D. Deshler. 2002. Educating citizens about controversial issues: The case of suburban goose management. *Society Nat. Resources* 15:581–597.
- Liberg, O. and M. Sandell. 1988. Spatial organisation and reproductive tactics in the domestic cat and other felids. In *The domestic cat: The biology of its behaviour*, eds. D. C. Turner and P. Bateson, 83–98. Cambridge, UK: Cambridge University Press.
- McGlinchy, B. K. 1997. *Application of the theory of reasoned action to public response for urban deer management alternatives*. MS thesis, Clemson University, Clemson, SC.
- Merrill, J. A., E. G. Cooch, and P. D. Curtis. 2003. Time to reduction: Factors influencing management efficacy in sterilizing overabundant white-tailed deer. *J. Wildl. Manage.* 67(2):267–279.

- Miles, M. B. and A. M. Huberman. 1994. *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage.
- Miller, L. A., B. E. Johns, and G. J. Killian. 2000. Immunocontraception of the white-tailed deer with GnRH vaccine. *Am. J. Reprod. Immunol.* 44:266–274.
- Pate, J., M. J. Manfredo, A. D. Bright, and G. Tischbein. 1996. Coloradans' attitudes toward reintroducing the gray wolf to Colorado. *Wild. Soc. Bull.* 24(3):421–428.
- Patronek, G. J. 1998. Free-roaming and feral cats: Their impact on wildlife and humans. *J. Am. Vet. Med. Assoc.* 212:218–226.
- Schmidt, R. H. 1992. Why bad things happen to good animals. In *Proceedings of the 15th Vertebrate Pest Conference*, eds. J. E. Borrecco and R. E. Marsh, 25–28. Davis: University of California-Davis.
- Seidman, I. 1998. *Interviewing as qualitative research: A guide for researchers in education and the social sciences*. New York: Teachers College Press.
- Serpell, S. A. 1988. The domestication of the cat. In *The domestic cat: The biology of its behaviour*, eds. D. C. Turner and P. Bateson, 151–158. Cambridge, UK: Cambridge University Press.
- Whittaker, D., M. J. Manfredo, P. J. Fix, R. Sinnott, S. Miller, and J. J. Vaske. 2001. Understanding beliefs and attitudes about an urban wildlife hunt near Anchorage, Alaska. *Wildl. Soc. Bull.* 29(4):1114–1124.
- Zaunbrecher, K. I. and R. E. Smith. 1993. Neutering of feral cats as an alternative to eradication programs. *J. Am. Vet. Med. Assoc.* 203:449–452.