

## SUBURBAN DEER MANAGEMENT: A MATTER OF PERSPECTIVE

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**ABSTRACT:** Many metropolitan areas in the eastern United States are experiencing management conflicts associated with overabundant deer (*Odocoileus virginianus*) populations. Sometimes these deer populations exceed the biological carrying capacity of available habitat and wildlife acceptance capacity (Decker and Purdy 1988) of local residents. For nearly 2 decades, a deer management controversy has been developing in Durand Eastman Park and the Town of Irondequoit, located in the greater Rochester metropolitan area, Monroe County, New York. Three local citizen organizations concerned about deer are described, and each has promoted various nonhunting alternatives to reduce human-deer problems. For 15 years, the New York State Department of Environmental Conservation (DEC) has promoted liberal archery seasons as the preferred alternative for reducing deer numbers, although the discharge of bow and arrows is prohibited within the Town of Irondequoit and Durand Eastman Park by local laws. During 1992, DEC and Cornell Cooperative Extension (CCE) organized a Citizen Task Force (CTF) in an attempt to resolve this controversy and reach consensus with community leaders concerning future deer management objectives and alternatives. CTF members exhibited a wide range of values and attitudes concerning suburban deer management. A deer management plan was developed and implemented based on CTF recommendations. This case study emphasizes the need for integrating both the biological and human dimensions to resolve suburban wildlife management issues.

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At the North American Wildlife and Natural Resources Conference this spring, U.S. Department of the Interior Secretary Bruce Babbitt urged listeners to be aware of situations leading to potential "environmental train wrecks" that occur when the ecological and social values of people collide. Human conflicts with deer in residential landscapes provide an example of an environmental train wreck that is occurring or speeding toward communities in many metropolitan areas of the eastern United States. During the past decade, white-tailed deer populations have reached unprecedented levels in many states. Deer management conflicts in residential landscapes are a relatively new phenomenon, as suburban herds have dramatically increased since the mid-1970s (Flyger et al. 1983, Decker 1987, Diamond 1992). In many instances, population growth of deer in parks and suburbia has accompanied hunting restrictions imposed by town governments and private landowners (Decker et al. 1982, Curtis and Richmond 1992). Ornamental shrubs and gardens provide plentiful, high-quality food, and many suburban herds are relatively free from predators except for dogs or coyotes (*Canis latrans*). In many residential neighborhoods and suburban parks, factors which would regulate deer population growth are almost nonexistent (Parkhurst and O'Connor 1992).

Decker (1987) and Connelly et al. (1987) noted that deer in suburban areas cost residential property owners

millions of dollars, present safety hazards to motorists, and are perceived by some residents to be potential agents in the spread of Lyme disease. Approximately 70% of respondents recognized the need for some form of deer management in northern Westchester County, New York (Connelly et al. 1987). However, only 30% of respondents supported the use of firearms hunting to regulate deer numbers (Connelly et al. 1987), and many suburban residents enjoy seeing deer (Decker and Gavin 1987). Considerable public disagreement remains over the need for, and the feasibility, humaneness, and economics of hunting as a management tool (Parkhurst and O'Connor 1992). However, wildlife management professionals still strongly support public hunting as the most economical and humane method for removing excess deer (Ellingwood and Caturano 1988). Controversy develops when wildlife managers decide deer hunting with bow or firearms should be implemented despite organized public opposition (Decker 1987). In suburban communities where herd reduction objectives have been clearly defined, plans are formed in advance, and cooperation of all stakeholders has been obtained, hunting can be a safe and economical management alternative (Parkhurst and O'Connor 1992, Winchcombe 1992).

The ecological parameters of managing deer are relatively well understood based on more than 40 years

of practical experience and research investigations. Populations are scientifically managed primarily through the removal of female deer in rural areas, but several challenges remain in the management of suburban herds (Curtis and Richmond 1992). In residential areas the pertinent questions become what is an "acceptable" density for a suburban population, and when numbers exceed these goals, how should excess deer be removed? These questions broaden the management environment (Decker et al. 1992), and economic, sociocultural, and political information is needed to develop appropriate management objectives and actions.

The deer management controversy in the greater Rochester metropolitan area in Monroe County, New York, has been festering for nearly 2 decades. Deer problems in the Town of Irondequoit were first brought to the attention of the New York State Department of Environmental Conservation (DEC) in 1974, as several complaints of truck and fruit-crop damage were noted. Reports of landscape and garden damage by deer soon followed. These problems led to discussions including Irondequoit area citizens, the Monroe County Conservation Council, and DEC. In 1976 Deer Management Unit (DMU) 96, including the City of Rochester and all or portions of the Towns of Irondequoit, Greece, Brighton, and Pittsford, was formed to address deer management issues in this highly-urbanized area (Hauber 1993). The State Legislature permitted taking deer of either sex by archery during the entire season in DMU 96.

In response to perceived public safety problems, the Town of Irondequoit passed an amendment to their Discharge Ordinance in 1978 prohibiting the use of bow and arrows (Hauber 1993). The 965-acre Durand Eastman Park, mostly land owned by Rochester City and administered by the Monroe County Parks Department within the Town of Irondequoit, also had county regulations prohibiting hunting within the park. Consequently, local laws augmented the growth of deer populations in the Town of Irondequoit for nearly 15 years.

Since 1989, several grassroots citizen groups have organized in the Rochester area to promote specific agendas regarding the deer population. In mid-1990, concerned Irondequoit citizens formed the Irondequoit Deer Action Committee (IDAC). Deer populations exceeded the tolerance levels of many IDAC members, and excessive numbers of deer-related vehicle accidents

(more than 100 reported each year in Irondequoit since 1987) were of primary concern. The mission of this group was to develop deer population management objectives for the town, and serve as a clearinghouse for deer-related information and publications (Hauber 1993). IDAC collected a large volume of publications and made these materials available for public review at area libraries. In 1991, IDAC proposed 3 potential alternatives (trap and transfer, trap and slaughter, bait and shoot) for reducing the deer herd in Irondequoit.

In response to these recommendations, 2 citizen groups with animal welfare orientations formed (Curtis et al. 1993). The Monroe County Alliance for Wildlife Protection (MCAWP) was organized in 1991 by a former member of IDAC. This group believed insufficient research data were available to justify the proposed deer herd reductions. MCAWP stressed that deer-vehicle collision rates could be lowered with an aggressive public education campaign and reduced speed limits in problem areas. In early 1992 a third group, Save Our Deer (SOD), was organized to promote the positive and aesthetic values of deer. MCAWP and SOD opposed IDAC's proposals to remove deer from Durand Eastman Park or the Town of Irondequoit.

The stage was set for a "train wreck" concerning deer management objectives and strategies for Irondequoit. DEC continued to promote archery hunting as the solution to deer overpopulation problems based on past experience in other areas of New York and cost-benefit considerations (Hauber 1993). Town government and many local residents only considered nonhunting deer management options, and there was no clear consensus concerning the best approach. The controversy had been developing for so many years that members of deer-related organizations were entrenched in their values, beliefs, and visions pertaining to a suburban deer management program for the Town of Irondequoit. This conflict concerning deer management methods is not unique, and we expect similar controversies will continue to occur in many metropolitan areas throughout the United States.

## **PUBLIC INVOLVEMENT FOR RESOLVING DEER MANAGEMENT CONFLICTS**

In keeping with the conference theme, balancing the needs of society was a monumental task facing wildlife managers in DMU 96. During fall 1991, DEC staff attempted to resolve the deer management controversy

through a public involvement effort that engaged a variety of interests in recommending a course of action to wildlife managers and the community. In cooperation with Human Dimensions Research Unit and Cornell Cooperative Extension staff, from the Department of Natural Resources at Cornell University, DEC regional wildlife managers implemented a modified version of the Citizen Task Force (CTF) approach used successfully in rural areas of New York State (Decker 1991, Hall 1992, Nelson 1992, Stout et al. 1992a, Curtis et al. 1993).

When using a more conventional approach, stakeholders will typically contact a regional wildlife manager to make their desires known. The wildlife manager weighs the input from several groups, considers the consequences of proposed alternatives, and often sets management objectives based on a compromise position (Stout et al. 1993). Stakeholders have little understanding about how the decision was made or how their concerns were balanced against other competing interests.

With the CTF model, representative stakeholders share their views directly with one another during a series of meetings, reach agreement and consensus where possible, and make deer management recommendations as a group to the wildlife manager. The wildlife manager sets the ecological and regulatory bounds for the final decision, and agrees to work towards implementing management recommendations of the CTF within these limits. Communication and understanding of deer management and the decision-making process is gained by all participants.

Implementing a similar public involvement process involves many considerations. First, who should participate in the process? Hahn (1988:12) emphasized that all perspectives should be included when resolving public policy issues. For each specific issue, all relevant decision-makers, supporters, and opponents should be identified and included in the process. It is critical that every stakeholder interest be involved. In DMU 96, one citizen group (SOD) formed concurrent to implementation of the CTF, and therefore was not included as a member of the CTF. Nine months later at a press conference announcing the CTF's recommendations, SOD and MCAWP members rallied together to protest the proposed course of action.

Most wildlife management professionals are aware that the political nature of deer management

controversies can affect public involvement strategies and subsequent implementation of recommendations. Key decision-makers from state, county, and town government can be brought into public involvement strategies as partners in planning and evaluating the approach (Stout et al. 1992b), or serve as technical advisors and provide additional information when members express a need. Minimally, key decision-makers should be apprised of progress to facilitate implementation of recommendations.

In DMU 96, local politics affected both the CTF process and implementation of outcomes. Overlapping governmental jurisdictions greatly increased the complexity of the situation. Understanding which government entity had authority for implementing or rejecting a particular deer management approach, and their current position concerning a specific option, contributed to the complexity of the situation. Public involvement planners, participants, and decision-makers need patience and perseverance to discern the different agendas and mandates that local and state governments bring into the process. In DMU 96, the cooperation of many agencies was necessary for planning and implementing the CTF bait-and-shoot recommendations including: DEC, Cornell Cooperative Extension, Monroe County Parks and Sheriff's Departments, Irondequoit Police Department, New York State Department of Agriculture and Markets, and New York State Prison officials.

Another consideration is the cost of implementing actions recommended by a CTF. State agencies are financially limited, and may be philosophically opposed to methods other than hunting. In these situations, responsibility is placed on local governments for funding nontraditional deer management alternatives. In Irondequoit, financial support from both the town council and county legislature was required to research the effectiveness of experimental immunocontraceptives. Two universities submitted bids, however, neither approval nor dollars to initiate a contraception study have been finalized to date. Some people in the community are unwilling to pay the additional cost for research, but are in favor of deer contraception regardless of the outcome. The information base wildlife managers require to address stakeholder questions concerning local deer numbers and the cost-effectiveness of both hunting and nontraditional methods has rapidly expanded.

Ideally, CTF members would like to reach management decisions that reflect all perspectives in an equitable way. The decision-making process considering multiple stakeholders' perspectives has been modeled by Decker and Lipscomb (in preparation) as:

$W_i = N_i \times I_i \times S_i$ , where

$W_i$  = weight given to a particular stakeholder group in a management decision;

$N_i$  = size of the stakeholder group;

$I_i$  = intensity of the group's position on an issue;

$S_i$  = the stake the group has in the issue (the relative impact of the decision on the group).

In order to weigh the importance of a particular group in a management decision, participants must be able to estimate the size of each stakeholder group, the intensity of their positions, and the relative impact of the decision on each group. The strength of the mandate for a given management alternative or action can be estimated by the difference in the sums the relative weights of those in favor, and those opposed to the action, with the formula:

$$\sum_{i=1}^{n_{\text{pro}}} W_i - \sum_{j=1}^{n_{\text{con}}} W_j$$

As the difference between pro and con positions diminishes, it's critical to have accurate measures of their weights and monitor changes over time. This is especially true for situations where the intensity of a group's position and/or stake is high, and where there is no clearcut consensus across groups as to the most appropriate management action.

Although the size of each interest group has an influence on the weight it is given in a decision, this model suggests that simple "majority rules" procedures are not appropriate for making decisions. For example, commercial fruit producers are a relatively small stakeholder group, yet their stake in deer management decisions can be quite large, as overabundant herds could affect farm income and agricultural sustainability.

Citizens in the community who are interested in deer ecology or management should have an opportunity to become involved. Educational meetings can provide for interchange of ideas between professional wildlife managers, public involvement participants, deer-related

citizen organizations, politicians, and others who have an interest in suburban deer herds. This will increase the information base for decision-making (Decker et al. 1992), and enhance community support for the process.

When deciding on particular courses of action, how should minority opinions be handled? It's important to keep all groups involved in the process so that all stakeholders believe they have had sufficient input into the final decision. Alienating groups with minority views may lead to attempts to block implementation of the final recommendations. All alternatives considered should be clearly stated, along with the reasoning for selecting a preferred management option. Those who do not support a particular course of action must have an outlet for voicing their views and reasoning.

In summary, we suggest the following plan of action for keeping wildlife damage management programs in balance with the needs of society:

(1) address the wildlife damage management situation early before groups become entrenched and confrontational. Hahn (1988:4-5) describes 8 stages of issue evolution in the public policy arena. The ideal times to begin a public involvement process is in stages 2 or 3, when people in the community are developing a sense that something needs to be done to address an issue, and they are making contact with key decision-makers.

(2) build an information base for stakeholder groups so they can make informed recommendations to the wildlife agency, local government officials, and the community. Decker et al. (1992:47) noted that adequate information is needed to know what management options are possible and feasible, and for predicting the outcomes of various actions. Sources of information include collective experience, research results, and culture. Kinds of information needed include biological, ecological, economic, and social science data, common knowledge, and prevailing philosophies.

(3) provide people with an outlet to voice their opinions concerning potential wildlife management alternatives. Hahn (1988:13) noted that few people will participate in the public involvement process unless they are directly affected by the situation and see some possibility for personal benefit. Decision-makers need to interact with people on all sides of an

issue. There is no simple strategy to accomplish this, however, informational meetings open to the public may set the stage for this process.

(4) if conflict is already high, build a partnership with an unbiased, skilled facilitator when developing a public involvement strategy. Hahn (1988:21) suggested that people experienced with community mediation techniques can assist with managing conflict. To reduce conflict, it's important to focus on the issues and avoid personal attacks; agree on ground rules and procedures; and seek agreement on objective standards for a fair solution.

(5) develop a plan to involve stakeholders who reflect a variety of opinions expressed in the community making certain to incorporate minority opinions into the process. Hahn (1988:12) indicated advocates of a particular outcome may be tempted to leave potential opponents out of the process. However, decision-makers must take the opposition into account, either initially or later in the process. We believe it's best to involve all groups from the start, and plan for managing potential conflicts.

#### **PUBLIC POLICY EDUCATION OPPORTUNITIES**

Addressing controversial wildlife management situations provides resource management agencies with an ideal environment for public policy education. Resolving human-wildlife conflicts requires the integration of ecological and human dimensions into a complementary process (Decker et al. 1992). At the local level, the final decision for implementing a proposed deer management action will often be made by either town councils or county legislatures as part of a political process. Cooperative Extension Service agents or wildlife managers can provide policy education leadership. Decision-makers and their constituents must be kept aware of current technology, and the costs, benefits, and predicted outcomes of various deer management options.

A variety of audiences, both traditional and nontraditional, will be interested in suburban deer management. Consequently, to keep people informed will require a carefully planned communication strategy. Those who participate in public involvement strategies function as multipliers, sharing information with the organized groups they represent. However, all potential audiences will not be clearly defined, so a

communication strategy could include a combination of media channels such as television, public workshops, newspapers, nature centers, etc. In DMU 96, local volunteers trained by professional wildlife biologists collected baseline data concerning the physiological condition of deer. Informed publics can build support for wildlife agencies and management programs. In DMU 96, grassroots pressure from interested citizens could be attributed in part for making local politicians act on a controversial deer management approach.

The CTF approach brings key government and community leaders together to focus on a common set of deer management objectives. By providing input during development of a plan of action, each stakeholder builds ownership in the process and outcomes. Specific workgroups comprised of staff from various agencies or community leaders may be charged with implementing final recommendations. It's important and necessary to build an evaluation component into the management plan. Selection of appropriate indicators for tracking progress towards management objectives may be difficult, and will depend on the specific situation. Potential indicators could include a reduction in deer-related vehicle accidents, fewer reports of plant damage, reduced incidence of Lyme disease, or many others.

#### **THE VIDEOTAPE: VOICES, VIEWS, AND VISIONS**

Similar deer management controversies have occurred in other suburban areas (Kuser and Applegate 1986, McAninch and Parker 1991, Witham 1991). Integrating the ecological and social dimensions of wildlife management can be a very complex and time-consuming process. Many other communities in the United States are currently, or soon will be, faced with deer herds that exceed the wildlife acceptance capacity of suburbanites and biological carrying capacity of available habitat. It's important that resource managers document their experiences so that others can learn from them. We produced the videotape titled "*Suburban Deer Management: Voices, Views, and Visions*," to increase awareness of deer conflicts in the greater Rochester metropolitan area, and highlight a range of perspectives shared by local residents and agency staff.

After viewing the tape, it becomes apparent that acceptable solutions for resolving human-deer conflicts are very much a matter of perspective. Each

stakeholder in the CTF process brings to the table his or her personal biases, collection of past experiences, and "stake" in an array of possible outcomes. Each person's stake is composed of multiple dimensions including economic, behavioral, cultural, and psychological/physiological attributes (Decker and Lipscomb, in preparation). It's also important to initiate public involvement strategies before the intensity of various arguments becomes too great and stakeholders become entrenched in their positions. For the CTF process to be successful, stakeholders must have some flexibility, and be willing to weigh the relative merit of all potential management alternatives. If problems go unresolved for long periods of time, the intensity of the situation will likely increase, making it more difficult to reach consensus on critical issues.

The interviews with deer management stakeholders indicated data gaps in the biological and sociological information bases (Decker et al. 1992). Research needs in the ecological dimension include: (1) reliable methods for censusing suburban deer herds and modeling population growth, (2) quantitative models for predicting the outcomes of potential deer management alternatives, (3) efficacy of new immunocontraceptive techniques for free-ranging deer, and (4) the potential for specialized archery seasons to control deer population growth in park and residential landscapes.

Additional information required in the social dimension includes: (1) the beliefs and values concerning human-wildlife interactions which form the foundation for specific attitudes about wildlife management in suburban situations, (2) the influence of educational outreach or applied research projects for modifying specific values or beliefs, (3) understanding motivations causing individuals to actively promote various wildlife management alternatives, (4) public support/opposition for lethal vs. nonlethal population control options, (5) the importance of utilizing meat, hides, etc. from deer removed by nonhunting methods, and (6) the willingness of citizens to pay for specialized management, especially nonhunting approaches (i.e., contraception).

The complexities of suburban wildlife management require resource managers, who are traditionally educated in applied ecology, to function within cultural, economic, and political arenas (Decker et al. 1992). Formation of working groups or "management teams" (Krueger et al. 1986), with individuals

representing both ecological and social science dimensions, will be necessary to effectively address these situations. This will likely require significant changes in staffing and operations of most state wildlife agencies charged with deer management.

The challenges are great, and professional resource managers must now make critical decisions. Decker (1987:344-45) noted that the controversy is not over management of deer per se, but the method. The question the wildlife profession must address is, "Should we continue our proven, traditional management approaches and propose only recreational hunting as a control mechanism, even when we face strong public opposition; or should we experiment with more costly, unconventional approaches (i.e., immunocontraception or sharpshooting) in certain situations at the risk of establishing a nonhunting precedent for deer management?" Professional biologists have the opportunity to provide leadership and vision in these difficult deer management situations, and get the "train" on the right track, or managers can resist change and continue business as usual. If we take the latter course of action, undoubtedly many potential "wrecks" may be just around the corner.

Even though suburban deer management may seem to be a monumental task, the situation provides several unique opportunities. First, it makes wildlife management relevant to many audiences in addition to sportsmen and conservation organizations. Motorists, gardeners, and other publics realize that they have a "stake" in determining appropriate population levels for deer in residential landscapes, and these nontraditional audiences are often excited to participate in the decision-making process. Also, groups with strong animal welfare orientations, who may resist any method of deer removal, must now confront a much wider array of publics than simply hunters. In Rochester, there was broad-based community support for lowering deer numbers and reducing the risk of deer-vehicle collisions, and the arguments presented by animal welfare groups opposed to deer culling were overwhelmingly rejected.

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