We examined the evolution of four public wildlife management issues using theories from collective action, social networks, and social constructionism to understand key roles and perspectives among stakeholders engaged in collective actions related to wildlife management policies. We conducted semi-structured telephone interviews with 50 key stakeholders in four communities in New York State that experienced collective stakeholder interactions in the contexts of waterfowl hunting or wildlife trapping. Our results revealed that collective action coordinators and brokers, representing local/in-state regional organizations, were not initially involved in the disputes but became involved over time. These individuals reframed the public issue from original concerns over personal safety, private property rights, and spatial proximity to include concerns about humaneness of wildlife harvest activities and regulations. Stakeholder engagement strategies for managing the impacts from these initial interactions should consider the temporal element of how the social construction of each issue changes over time.

Keywords  social network analysis, collective actions, issue framing

Introduction

In North America, wildlife professionals are increasingly faced with managing the impacts of interactions among people associated with wildlife management activities, such as wildlife harvest (Riley et al., 2002). Social conflicts among stakeholders arising from negative stakeholder interactions, as well as related public issue discussions and political activity, contribute to a strained wildlife management climate. In recent years, public issues and social conflicts resulting from initial individual stakeholder interactions have emerged, most notably among wildlife trappers and dog owners (Unruh, 2009) and waterfowl hunters and waterfront residents (Hubbard, 2008). In New York State, for example, although the number of social conflicts related to stakeholder interactions about wildlife management each year is limited, political activity resulting from such conflicts has been pronounced. Individual conflicts may enlarge to encompass broader public issue and policy discussions,
leading to outcomes with the potential to greatly affect wildlife management by influencing the range of recreational opportunities on public lands, wildlife-use opportunities, legal management tools and techniques, and public support for wildlife as a resource in New York State.

The issue-evolution model provides a conceptual tool to understand how initially private stakeholder interactions evolve to become the topic of broader public issue discussions and eventual political activity with significant implications for wildlife management policy (Decker, Raik, & Siemer, 2004; Hahn, 1990). During the initial “concern” stage, individuals or groups identify undesirable impacts in their community and discuss them with friends or neighbors. In the “involvement” stage, stakeholders seek support from one another and begin to inform state wildlife management agencies, elected decision-makers, or nongovernmental organizations regarding their concerns. The “issue” stage occurs when a critical mass in the community believes the impacts are of concern, although they might not all agree with the prevailing perspective. The issue-evolution cycle continues toward resolution through community discussion and involvement. Within this issue-evolution cycle, little is known about the relationship between the initial “concerns” stemming from undesirable impacts and how and why stakeholders socially organize a critical mass of stakeholders.

In this article, we address this information gap and explore how the perceived undesirable impacts from individual stakeholder interactions in the contexts of wildlife trapping or waterfowl hunting move through the concern and involvement stages of public issue evolution. We draw on collective action, social network, and social constructionism theories to reveal how the impacts from private stakeholder interactions become public issues in each of these contexts. We focus on how stakeholders perceive and frame the issues, the social interactions that emerge and the resulting coordinated collective actions that lead to public issue discussions. We conclude with recommendations for stakeholder engagement toward achieving the outcomes and impacts valued by stakeholders.

**Conceptual Framework**

When public issues regarding wildlife management arise, stakeholders may act individually or collectively to influence policy. When two or more individuals join together in these types of actions seeking a common goal, they are considered to be engaging in collective actions (Ostrom, 1998). Social ties among individuals involved in collective action are essential for enabling communication and coordination of the action (Marwell, Oliver, & Prahl, 1988). In a collective action, a limited number of stakeholders typically hold key coordination and communication role. These individuals are highly influential in framing an issue and its associated goals.

**Collective Action**

Collective actions are the efforts by two or more individuals who join together to seek outcomes that would not likely be attainable without the involvement of others (Olson, 1965; Ostrom, 1998). In the political environment, voting, lobbying, or forming interest groups are examples of collective actions (Ostrom, 1998). In natural resource management, collective action theories have been applied to the co-management of common-pool resources (Ostrom, 1990), for example, regarding voluntary landowner cooperatives for the management of habitat for deer (Wagner, Kreuter, Kaiser, & Wilkins, 2007). Wildlife stakeholders engage in these actions that enable public issues to emerge and potentially
Evolution of Public Issues in Wildlife Management

influence wildlife management policies (Williamson, 1998). In extreme cases, stakeholders may engage in collective actions to determine wildlife policy through direct democracy, such as ballot initiatives or referenda where such mechanisms exist (Cockrell, 1999; Loker, Decker, & Chase, 1998; Whittaker & Torres, 1998; Williamson, 1998).

In our study context, collective actions occur as the impacts from initially limited stakeholder interactions become the focal topic of public issues. The set of collective actions on these issues may include stakeholders who perceive different concerns and impacts. We examined these stakeholders to identify the prevailing perspectives in collective actions. As the public issue evolves, the prevailing perspective may change based on who serves in key collective action roles. We aim to identify the collective action coordinator of the prevailing perspectives and the key broker who may connect diverse viewpoints and communicate information about the collective action.

Social Networks

Social network analysis reveals the patterns of relationships among individuals (Wellman, 1988). Social network theories deal with the classic questions of how relationships, rather than individual characteristics, influence behaviors (Wellman, 1988). Connections between people (e.g., a dyadic pair) represent relational linkages of a social network. When pairs of people connect with other pairs through their relationships a larger social network structure is formed (Scott, 2000). Social network analysis is emerging in natural resources management where researchers are not only interested in stakeholders’ interests and concerns (e.g., attribute data), but also in how stakeholders interact together in a social network (e.g., relational data) (Adger, Brown, & Tompkins, 2005; Janssen et al., 2006; Prell, Hubacek, & Reed, 2009). However, limited empirical examples in natural resources management exist (Prell et al., 2009).

In this article, we integrated social network analysis with collective action theories to reveal how prevailing collective actions operate as public issues emerge. When concerns over the impacts of stakeholder interactions emerge, some stakeholders may have well-established organizations while other stakeholders may not be involved with organizations or may only represent themselves (Wellman, 1988). For example, some waterfowl hunters and wildlife trappers have pre-existing well-formed organizations, but other stakeholders may not have established organizations with easily accessible pre-existing network ties.

To identify resource-rich individuals who are key to mobilizing collective action, we were interested in two empirical indicators: degree centrality and betweenness centrality. Degree centrality is the level of connectedness of one network member to other network members (Prell et al., 2009; Scott, 2000). The individual that is directly connected to the most other network members will have the highest degree centrality. The individuals with the highest degree centrality serve as key coordinators for collective actions because they have the greatest potential for motivating the network and quickly diffusing information through a centralized network (Diani & McAdam, 2003; Prell et al., 2009; Rogers, 2003). In our study, individuals with the highest normalized degree centrality (ndegree) are called “coordinators.” In contrast, betweenness centrality refers to the extent to which an individual lies “in-between” other individuals who themselves are disconnected (Prell et al., 2009; Scott, 2000). This individual can play an important broker or gatekeeper role for information flow. This broker may link disconnected segments of the network and mobilize or diffuse information about collective actions to the larger network (Rogers, 2003), which may exacerbate or resolve conflicts (Diani & McAdam, 2003; Prell et al., 2009; Rogers, 2003). For our study, individuals with the highest normalized betweenness centrality (nbetweenness)
are called “brokers.” How individuals in key roles perceive public issues has implications for how they frame issues when communicating with others about collective actions.

**Social Constructionism and Framing**

The perceptions and meanings people construct about reality, or social constructionism, result from their interactions with other people and social systems (Allen, 2005; Patton, 2002). According to this definition, social network interactions will play an important role in enabling individuals’ social construction of a phenomenon, and may explain why perceptions of public issues vary across individuals, particularly if they are members of different social networks. Previous research has shown that negative or indirect network relationships are associated with higher perceived intergroup conflicts (Labianca, Brass, & Gray, 1998). In essence, each person has a different web of social network interactions from which they develop their perceptions or frames of public issues, potentially leading each person to have a slightly different perception (Benford & Snow, 2000). How prevailing perspectives in public issues are framed may be influenced by key stakeholders who play important roles for enabling collective actions.

Our objectives were to document the social networks related to wildlife stakeholder interactions and determine which key stakeholders enabled collective actions and fostered the evolution of public issue discussions through time. The key roles we considered were: (a) initial disputant, as identified by respondents; (b) coordinator, as identified by the network measure of highest ndegree centrality; and (c) broker, as identified by the network measure of highest nbetweenness centrality. Additionally, we sought to examine how these stakeholders in key network positions perceived, or framed, the collective action associated with these public issues. Understanding differences in collective action frames may be important for responding to and engaging with concerned stakeholders. Figure 1 presents a visual heuristic of the conceptual framework informing this research.

**Methods**

We used purposeful maximum variation sampling (Patton, 2002) to identify common patterns that might cut across the cases. Our goal was to yield insights and in-depth understandings about how stakeholders interact with each other on these public issues. We selected two communities with public issues relating to waterfowl hunting and two communities with public issues relating to wildlife trapping. For each study context (public issues over wildlife trapping or waterfowl hunting), we included one rural and one suburban community. The characteristics of the overall issue in each community were similar in that each involved impacts from interactions among consumptive (e.g., hunters or trappers) and non-consumptive (e.g., dog owners or waterfront residents) stakeholders.
relating to waterfowl hunting or wildlife trapping activities in recent years. Communities were selected based on the occurrence of a wildlife-related public issue discussion within the past 10 years (since 2001).

Case Studies of Public Issues Relating to Waterfowl Hunting

**Brookhaven, New York**

Brookhaven, a suburban Long Island community, is located in Suffolk County, which has approximately 1.5 million residents (USCB, 2005). Although the Town of Brookhaven spans both the north and south shores of Long Island, the concerns over waterfowl hunting have primarily focused on Mount Sinai Harbor, located on the north shore. Concerns over waterfowl hunting have existed for several decades, but the public issue emerged clearly in the mid-1990s after a meadow on the eastern edge of the harbor was developed and prompted residents’ concerns about waterfowl hunting activity in the area. In 2003, harbor residents, local hunters, and town officials developed a cooperative agreement in which the hunters self-restricted their hunting locations to avoid the tidal waters immediately adjacent to the homes. However, it was illegal to possess a firearm on town-owned lands. The cooperative agreement worked until 2007 when the issue surfaced again and local hunters successfully lobbied the Town of Brookhaven Council to pass a local law permitting waterfowl hunters to possess unloaded and encased firearms on the municipal lands (e.g., town-owned boat ramps) for the purposes of waterfowl hunting. This change in law made it possible for hunters to legally access the harbor with their firearms.

**Canandaigua, New York**

Canandaigua, a rural community located in central New York is located in Ontario County, which has approximately 100,000 residents (USCB, 2005). In 2001, an altercation occurred between a resident living along Canandaigua Lake and a waterfowl hunter hunting on the lake. The resident objected to waterfowl hunting in close proximity to her home. Interactions between the hunter and the resident escalated. The hunter charged the resident with hunter harassment and the resident charged the hunter with several violations, including hunting too early in the morning, hunting over baited waterfowl, trespassing, and littering. The charges against both parties were eventually thrown out of court. The City of Canandaigua passed a resolution requesting State Legislators to sponsor a bill that would amend New York State Environmental Conservation Law to change the law that exempts waterfowl hunters from the safety zone law prohibiting the discharge of firearms within 500’ of an occupied dwelling. The Town of Canandaigua did not approve a similar resolution.

Case Studies of Public Issues Relating to Wildlife Trapping

**Southampton, New York**

Southampton, a suburban Long Island community, is located in Suffolk County, which has approximately 1.5 million residents (USCB, 2005). In 2005, a domestic dog died as a result of being caught in a wildlife trap located in the Long Pond Green Belt, an area comprising lands owned by the Town of Southampton, The Nature Conservancy, and the New York State Department of Environmental Conservation. A trapper had set a body-gripping trap in the Green Belt near a recreational trail where the dog’s owner had allowed the dog
to run off leash. At the time, there were no local codes prohibiting the trap from being set or prohibiting the dog from being off leash. State Environmental Conservation Laws regulated trapping activities and prohibited dogs from running at large. The trapper was cited for violating the Environmental Conservation Law, which requires trappers to place an identifying tag on the trap. The dog owner was not cited for any violation. The Town of Southampton passed a local law prohibiting wildlife trapping on town-owned lands, and two nearby towns (East Hampton and Shelter Island) passed similar laws.

**Queensbury, New York**

Queensbury, a rural community in northern New York near the Adirondack Park, is located in Warren County, which has approximately 65,000 residents (USCB, 2005). In 2003, a dog was caught in a wildlife trap in Pack Forest in nearby Warrensburg, but released alive. However, in 2006, a dog died after being caught in a wildlife trap set on state land in nearby Lake Luzerne. Its owners were walking the dog along a gravel road, allowing the dog to run off leash. During the 2006–2007 trapping season, a Queensbury town resident became concerned about trapping after seeing a trapper place traps in a roadside culvert within the town. Several months later the Town of Queensbury Board reviewed a proposed resolution that would restrict where traps could be placed within the town. The trapping resolution was debated, but was not passed into law.

**Data Collection**

We identified potential participants for this study using a snowball sampling technique (Patton, 2002) by starting with key informants identified by staff from the New York State Department of Environmental Conservation–Bureau of Wildlife (DEC). We also reviewed newspaper stories and public meeting records to identify individuals who spoke with the media or at public meetings. From this initial sample, we asked respondents to refer us to potential informants until we were no longer referred to new informants. This sampling approach produces ego-centered networks, which are common for studying social networks in communities (Muller, Wellman, & Marin, 1999), particularly when the size and members of a network are unknown beforehand.

Potential study subjects were contacted up to three times by telephone where possible, and by letter when we were unable to reach them by phone. If the potential subject was interested in participating in the study, we scheduled an interview at a time of mutual convenience. We mailed a contact letter with additional study information. We conducted all of the semi-structured interviews, consisting of open-ended and closed-ended questions, over the telephone. We interviewed 50 individuals (14 in Brookhaven, 11 in Canandaigua, 13 in Queensbury, and 12 in Southampton). Although 20 potential subjects declined to be interviewed, they were still included in the policy network sociograms when other respondents identified relationships with them. The interviews were conducted between February and August 2009, and ranged from 15–90 minutes, with most approximately 40 minutes. Most interviews (46/50) were recorded. For the non-recorded interviews, we took detailed notes and expanded the notes afterwards.

**Data Processing and Analysis**

Data processing and analysis followed a similar protocol to McKether, Gluesing, and Riopelle (2009). All respondents were assigned a unique code, as were the stakeholders
identified by respondents. The unique code was used throughout data processing and analysis to protect the identity of the respondents and stakeholders. Interview transcripts, or the detailed interview notes, were imported into ATLAS.ti (Muhr, 2009) and coded for network relationships. We imported coded network data into UCINET (Borgatti, Everett, & Freeman, 2002), and calculated centrality measures. We reported the normalized degree centrality (ndegree) and normalized betweenness centrality (nbetweenness) measures so that they can be compared across various social networks of different sizes in different communities (Wasserman & Faust, 1994). Degree centrality counts the number of direct network ties that an individual network node has. Individuals with the highest normalized degree centrality measure were considered the collective action “coordinator” in the public issue discussions because their direct network ties allow them to have direct communications with diverse parties. In contrast, individuals with the highest normalized betweenness centrality measure were considered the collective action “broker” in the public issue discussions because betweenness centrality measures the extent to which a node is on the shortest path connecting any two nodes in the network. We displayed the sociogram (e.g., social network map) for each community using NetDraw (Borgatti et al., 2002).

We identified the “initial disputants” based on DEC contacts’ and respondents’ reports. In Figure 2, the larger the size of the node represents individuals with higher nbetweenness centrality measures. In the final analysis phase we examined the reported perceptions of the public issue for each of the key stakeholders involved in the collective actions in each community. For each key stakeholder, we compared perceptions for similarities and dissimilarities to reveal any patterns between network position and perception of the public issue and in how the individual frames the conflict when communicating with others (Rubin & Rubin, 2005). Both the qualitative text and quantitative social networks were used in this analysis.

![Figure 2](image-url)

Figure 2. Policy networks for stakeholders involved in public issue discussions relating to social conflicts about waterfowl hunting or wildlife trapping in case study communities: (A) Brookhaven, (B) Canandaigua, (C) Southampton, (D) Queensbury, New York State, USA, 2009. Size of node is nbetweenness centrality (larger the node = higher nbetweenness centrality measure).
Results

Brookhaven, New York

The initial disputants were residents living along the Mount Sinai Harbor in Brookhaven who originally expressed concerns about the waterfowl hunting activities. These individuals are identified as #13, 23, and 25 in the sociogram (Figure 2A) that depicts the policy networks for stakeholders involved in the Brookhaven public issue discussions related to waterfowl hunting. Respondent #13, a resident along Mount Sinai since the mid-1970s, described the impacts of concern as:

Being so close to the house, their weapons were not broken down when they were here . . . you have to respect the property rights of an individual . . . the hunters would park down there and walk through their yards with their weapons ready to go. We never [wanted] to stop duck hunting in Mount Sinai Harbor, it was to try and coexist safely (Table 1).

The key collective action coordinator was #1 (Figure 2A) with the highest ndegree centrality measure of 9.677 (Table 1). He was a staff member for a national waterfowl conservation organization, and also served as a collective action broker given his high nbetweenness centrality score (34.948). His perceptions of the impacts were:

Proximity to those homes, residents who are not going to be tolerant or claim to be scared . . . in other words, be respectful of these neighbors’ wishes—don’t go in this particular corner of the harbor, don’t stick it right in their face, stay out in the middle (Table 1).

The key brokers for the collective action were a waterfowl hunter and resident who lived on Mount Sinai Harbor since the mid-1950s (#14) and the staff member for a national waterfowl conservation organization (#1) (Figure 2A). The nbetweenness centrality measures were 34.948 (#1) and 34.58 (#14) (Table 1), and are indicated by the largest dots in Figure 2A. A key broker’s (#14) perceptions of the impacts were:

I have to say it is a noise problem. If they couldn’t hear the hunters, they wouldn’t care. There’s probably a trespassing problem concern too because [hunters] walk across somebody’s front yard because . . . they don’t have access to the waterway. Somebody has to control the wildlife (Table 1).

In Brookhaven, the initial disputants (#13, 23, and 25) did not play key roles coordinating the collective action (#1) or disseminating information as brokers (#1 and #14) (Table 1). The stakeholders in each of these key roles reframed the public issue from initial disputant’s concern for safety and private property rights to the coordinators’ concerns about proximity and respect to the brokers’ concern about noise and trespassing (Table 1).

Canandaigua, New York

For the conflict in Canandaigua, the initial disputants were #123, a waterfowl hunter from the surrounding area, and #118, a resident living along Canandaigua Lake, depicted in the sociogram of stakeholder policy network members involved in the public issue discussion
<table>
<thead>
<tr>
<th>Communities</th>
<th>Brookhaven</th>
<th>Canandaigua</th>
<th>Southampton</th>
<th>Queensbury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>Waterfowl hunting</td>
<td>Waterfowl hunting</td>
<td>Wildlife Trapping</td>
<td>Wildlife trapping</td>
</tr>
<tr>
<td>Development</td>
<td>Suburban</td>
<td>Rural</td>
<td>Suburban</td>
<td>Rural</td>
</tr>
<tr>
<td>Initial disputant</td>
<td>13, 23, 25</td>
<td>118, 123</td>
<td>230</td>
<td>362, 343</td>
</tr>
<tr>
<td>Frame</td>
<td>Concern for safety, private</td>
<td>Concern over hunters legally engaging in waterfowl hunting that allows them to hunt close to homes in the early morning hours while it is still dark outside.</td>
<td>Concern for personal decision of where to recreate with dog. Posting signs would have been informative.</td>
<td>Concern of the placement of traps in proximity to residential homes, schools, and other occupied dwellings.</td>
</tr>
<tr>
<td>Coordinator¹</td>
<td>1 (9.677)</td>
<td>118 (18.421)</td>
<td>232 (14.545)</td>
<td>345 (23.958)</td>
</tr>
<tr>
<td>Frame</td>
<td>Concern about proximity of hunting to homes. Hunters should be respectful of homeowners and not go too close.</td>
<td>Concern about proximity of hunting activities to occupied dwellings. Concern to change state Environmental Conservation Law to require larger distances.</td>
<td>Recognized trapping and recreation with dogs were both legal. Concern over local public safety authority because state has resource management authority.</td>
<td>Concern over too many regulations (statewide or local) affecting wildlife trapping.</td>
</tr>
</tbody>
</table>

(Continued)
Table 1  
(Continued)

<table>
<thead>
<tr>
<th>Communities</th>
<th>Brookhaven</th>
<th>Canandaigua</th>
<th>Southampton</th>
<th>Queensbury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broker(^2)</td>
<td>1 (34.948), 14 (34.58)</td>
<td>117 (18.129)</td>
<td>229 (33.400)</td>
<td>345 (28.197)</td>
</tr>
<tr>
<td>Concern for noise and trespassing, but must understand wildlife in this area need to be managed.</td>
<td>Laws in New York State protect the waterfowl hunter using the public waterway more than the riparian resident adjacent to the hunter.</td>
<td>Concern over the humaneness of wildlife traps.</td>
<td>No change to local town laws relating to waterfowl hunting. (City of Canandaigua passed a support resolution for changing state laws.)</td>
<td>Concern over too many regulations (statewide or local) affecting wildlife trapping.</td>
</tr>
<tr>
<td>Local town law changed providing more access and opportunity for waterfowl hunting.</td>
<td>No change to local town laws relating to waterfowl hunting.</td>
<td>Local town law changed prohibiting wildlife trapping (regulated and nuisance) on town-owned lands.</td>
<td>No change to local town laws relating to wildlife trapping.</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) As determined by highest ndegree centrality; ndegree centrality score in parentheses.  
\(^2\) As determined by highest nbetweenness centrality; nbetweenness centrality score in parentheses.
relating to waterfowl hunting (Figure 2B). The waterfowl hunter involved in the dispute (#123) described the impacts as:

I was hunting legally, [but I was] accused of trespassing, shooting early, . . . litter[ing], because I hadn’t picked up my shot shells, and . . . shooting too close to the property (Table 1).

The waterfront resident (#118) involved in the dispute, who also served as the key coordinator in the collective action, had an ndegree centrality of 18.421 (Figure 2B; Table 1). She described the impacts as:

The concern has to do with the specific waiver that is in the hunting regulations in New York State . . . where a waterfowl hunter does not have [to be] any required distance from an occupied dwelling when shooting out over open water . . . what I found waterfowl hunting generally takes place before sunrise—they have the ability to shoot from 1/2 hour before sunrise and they generally get to their location and get all set-up before sunrise (Table 1).

The key broker in the collective action was #117, with an nbetweenness centrality of 18.129, and was president of a local waterfowl hunting organization (Figure 2B; Table 1). He described the impacts as:

Charter of New York State and the navigation laws of New York State protect the waters of Canandaigua Lake—it is a public waterway. In effect gives, in my estimation, the user more rights than the riparian shore owner to some extent (Table 1).

In Canandaigua, one of the initial disputants (#123) did not play a key role in coordinating the collective action or disseminating information about it. As the public issue evolved, an initial disputant (#118) also served as the key coordinator in the collective action; however, a different individual (#117) served as the broker disseminating information (Table 1). The stakeholders in each of these key roles reframed the public issue from the concerns of the initial disputants and the coordinator about proximity of hunting relative to homes and early morning hunting, to concern of the broker about state Environmental Conservation Laws that enable waterfowl hunting close to shore (Table 1).

**Southampton, New York**

The initial disputant was stakeholder #230, a local resident who adopted a dog from a local animal rescue organization, which is depicted in the Southampton policy network sociogram (Figure 2C). The dog died as a result of being caught in a body-gripping wildlife trap. Since the dog was adopted from a local animal rescue organization, the owner took the dog and trap back to the organization. The initial disputant described the impacts from the stakeholder interactions as:

. . . for me, it goes back to the posting. If I saw a sign before I walked into a nature preserve that from Nov. until Feb, body-gripping traps may be present
in this area, I’m just going to turn around and decide to go someplace else (Table 1).

The collective action coordinator with an ndegree centrality of 14.545 was #232, the executive director of the local non-profit domestic animal rescue organization (Figure 2C). She formerly worked for a national conservation organization in the area that was one of the landowners of the property in the Long Pond Greenbelt Preserve where the dog was killed. The coordinator described the impacts as:

\[ \ldots \text{we realized that everything that happened was legal} \ldots \] and then there was education process further about past efforts to regulate traps and the whole issue of local jurisdiction vs. New York State you know [and] jurisdiction of wildlife laws (Table 1).

The broker in the collective action was #229, with an nbetweenness centrality of 33.400, the executive director of a local non-profit wildlife rescue organization (Figure 2C). She described the impacts as:

I have concerns about the humaneness of different kinds of traps used. Whether it’s a body-gripping trap, or even a cage trap, any kind of trap that does not kill an animal instantly, is considered inhumane particularly the body-gripping traps \ldots \text{[when] a non-target species} \ldots \text{that’s smaller or larger than the type of animal you’re trying to trap then it’s likely it won’t die right away} \ldots \text{(Table 1).}

In Southampton, the initial disputant (#230) did not play a key role coordinating the collective action (#232) or disseminating information as a broker (#229) (Table 1). The stakeholders in each of these key roles reframed the public issue from the initial disputant’s concern about information needed to make an informed decision to the concerns of the coordinator about public safety to the concerns of the broker about humaneness of wildlife traps (Table 1).

**Queensbury, New York**

The initial disputants were #343 and 362 as depicted in the Queensbury policy network sociogram (Figure 2D). A locally elected official (#343) described the impacts as: “...we wanted to curtail the placement of certain kinds of traps relative to proximity to residential neighborhoods where kids played and where pets were allowed to play” (Table 1).

The collective action coordinator and broker was the same individual, #345, who is a trapper, a licensed nuisance wildlife control operator, and involved with the state trapping association (Figure 2D). The ndegree centrality measure was 23.958 while the nbetweenness centrality measure was 28.197 (Table 1). He described the impacts as: “They’ve gone out of their way to make a whole lot of regulations for the whole state and the town, in this instance there was no incident. This was just a mere observation ... [or] a guy setting a trap” (Table 1).

In Queensbury, the initial disputants (#362 and 343) did not play key roles coordinating the collective action or disseminating information; rather, both roles were played by #345 (Table 1). The stakeholders in each of these key roles reframed the public issue from the initial disputant’s concern about proximity of trap placement to the coordinator’s and broker’s concern about too many regulations affecting trappers (Table 1).
Discussion

Our research demonstrates how an initial negative interaction between two people (initial disputants) may be amplified into a full blown public issue by key individuals within social networks, particularly when those individuals have the capacity to serve as coordinators or brokers of information exchange. In three out of four of the case study communities (Brookhaven, Southampton, and Queensbury as depicted in Figure 2A, 2C, and 2D), the initial disputants do not continue to play a key role in the prevailing collective action as involvement grows when the impacts from stakeholder interactions become the topic of broader public issues. In this “involvement” stage of the public issue-evolution process where stakeholders seek support from others (Hahn, 1990), individuals not involved in the initial dispute emerged to play key coordinating roles for the collective action and brokering roles for communicating information over time, as evidenced by the increase in numbers of stakeholders involved in the public issue discussions from the two individuals initially involved in each dispute, and also by increase in network density in Figure 2A, 2C, and 2D, in comparison to Figure 2B. Since the initial disputants played a less prominent role as the public issue evolved, this suggests in-field dispute resolution efforts, for example by local law enforcement or DEC Environmental Conservation Officers, might be able to mediate disputes before they become full-blown issues.

In two case studies (Brookhaven and Southampton), the key coordinators and brokers worked for local/in-state regional organizations that were related to the topic of the public issue. In Canandaigua, the broker was an active member and volunteer leader of a local/in-state regional organization. In Queensbury, the key coordinator and broker roles were played by the same individual. However, this individual was an active member and volunteer leader of the state-wide organization, as well as being active locally. These pivotal organizations were local/in-state regional rather than state-wide or national organizations, even when some of these events attracted national news coverage. Our results clarify previous research that has shown the importance of organizations for influencing participation in collective action, by identifying local/in-state regional organizations specifically (Diani & McAdam, 2003; McAdam & Paulsen, 1993). The local/regional nature of these influences suggests that as the dispute evolves toward a full-blown public issue, state wildlife agency or wildlife conservation organizations may be able to reach out to related local/in-state organizations to proactively involve them in conflict resolution or decision-making processes.

Across all four study communities, none of the individuals in key stakeholder and networking roles framed the public issue discussions related to banning waterfowl hunting or furbearer trapping as wildlife harvest issues per se. Their concerns focused instead on when, where, and how these hunting and trapping activities might be carried out on shared landscapes as part of a wildlife management program, expressing interests in minimizing the negative impacts resulting from stakeholder interactions. In the two waterfowl hunting communities (Brookhaven and Canandaigua), both initial disputants and coordinators expressed concerns over proximity of hunting activities to residences, especially possessing or discharging firearms and trespassing on private property. In Brookhaven, the initial disputant stated a goal for the waterfowl hunters and waterfront residents to co-exist safely, and the coordinator of the prevailing collective action sought an amicable resolution where hunters and residents might be respectful of each other. However, in Canandaigua, an initial disputant who opposed hunting and who also was the prevailing collective action coordinator acknowledged the legality of waterfowl hunting and sought to outright change state laws dealing with waterfowl hunting.
Much more variation in framing the issue exists in the wildlife trapping case study communities. In Southampton, the initial disputant framed the issue as a personal decision that she would have made if she had known wildlife traps were placed in the area where she walked her dog. However, in Queensbury, the initial disputant framed the issue as a need to curtail the placement of wildlife traps in proximity to occupied dwellings (e.g., homes, schools). These frames contrast with examples from other states that have had wildlife trapping-related public issues. For example, Colorado voters banned wildlife trapping throughout the state via a ballot initiative in 1996 (Cockrell, 1999). Because the stakeholders in our case study framed the public issue about being a well-informed dog walker or about the proximity of trap to occupied dwellings, the state wildlife agency potentially has alternative policy and management options available.

The policy outcome in three of the four case studies (Canandaigua, Southampton, and Queensbury) generally addressed public issues as they were framed by the key coordinators and brokers of these collective actions. It is important to note, however, that the policy outcome appears to not directly address the concerns of the initial disputants. Policies that fail to address the underlying causes of the initial dispute (e.g., concerns about proximity) may lead to protracted conflicts, especially if the negative interactions continue to occur, because the policies implemented do not actually address the root of the problems. In this situation, a state wildlife agency may no longer be able to rely on passive–receptive engagement with stakeholders, but may need to take a much more active role in managing the impacts from the initial stakeholder interactions, such as an intermediary approach, in which the agency and key stakeholders, including initial disputants, engage in two-way communication (Leong, Decker, Lauber, Raik, & Siemer, 2009). Engaging stakeholders with a variety of concerns may actually make resolution easier because they will likely have both similar and dissimilar interests (Fisher, Ury, & Patton, 1991).

The broader challenge of managing the impacts from stakeholder interactions is becoming an increasingly important focus for wildlife management agencies (Riley et al., 2002). Currently, the DEC uses stakeholder engagement strategies in the form of waterfowl hunter and wildlife trapper committees and task forces to provide recommendations for wildlife harvest regulations or address issues as needed. Expanding the scope of the waterfowl hunting and wildlife trapping citizen committees might be one way to proactively engage other stakeholders and their interests before negative impacts from stakeholder interactions become the focus of bona fide public issues. Alternatively, an intermediary approach (Leong et al., 2009) that brings together key stakeholders in an engagement process for learning about each others’ interests and underlying concerns may lead to mutually beneficial policy outcomes.

Conclusion

In most cases, different individuals played the key roles of initial disputant, coordinator, and broker in enabling the collective action and fostering the evolution of public issues in a wildlife management context. These key stakeholders reframed the public issue as it evolved. Being a representative of a local/in-state regional organization emerged as a common characteristic of coordinators or brokers in almost all the cases. If state wildlife agencies seek to resolve these social conflicts before they become full-blown public issues, in-field dispute resolution efforts by environmental conservation officers or local law enforcement might be able to mediate disputes before they advance to the “involvement” stage. Similarly, engaging representatives from local/in-state regional organizations on both sides of the issue would be an important step because of their role in coordinating
and recruiting others during the “involvement” stage of public issue evolution. Because the policy outcomes reflected the frames of key coordinators, not the initial disputants, to fully address the issues and underlying causes, state wildlife agencies may need to take a much more active role in engaging stakeholders in policy processes that address a range of stakeholders interests, not only those that frame the public issue discussions to ensure policies address the causes of the dispute. This will likely be important because if the policy discussions focus on the frames of the key coordinator, decision-makers could be addressing issues that were not at the center of the initial dispute and therefore not entirely addressing the issue. Engaging potentially affected stakeholders and incorporating their perspectives into wildlife management decisions may be a critical step for keeping the wildlife management institution in a central role for achieving conservation goals (Decker, Krueger, Baer, Knuth, & Richmond, 1996).

References


