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# Social Learning for Collaborative Natural Resource Management

TANIA M. SCHUSLER
DANIEL J. DECKER

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

MAX J. PFEFFER

Department of Rural Sociology
Cornell University
Ithaca, New York, USA

*This article contributes to understanding about the potential and limitations of social learning for collaborative natural resource management. Participants in a deliberative planning process involving a state agency and local communities developed common purpose and collaborative relationships, two requisites of comanagement. Eight process characteristics fostered social learning: open communication, diverse participation, unrestrained thinking, constructive conflict, democratic structure, multiple sources of knowledge, extended engagement, and facilitation. Social learning is necessary but not sufficient for collaborative management. Other requisites for comanagement, including capacity, appropriate processes, appropriate structures, and supportive policies, are necessary to sustain joint action.*

Public participation plays an increasingly central role in natural resource management despite "little systematic knowledge about what works in public participation or other deliberative processes" (Chess et al. 1998, 45). This article contributes to

knowledge about what works in deliberative processes and why. A cooperative effort with the New York State Department of Environmental Conservation (NYSDEC), this research investigated how an agency could encourage collaborative natural resource management, or *comanagement*, through a deliberative process fostering learning among participants. The inquiry occurred in conjunction with a search conference that engaged diverse stakeholders from local communities in planning for the Lake Ontario Islands Wildlife Management Area (LOIWMA) in New York's Eastern Lake Ontario Basin (Figure 1). Search conferences have been used in a
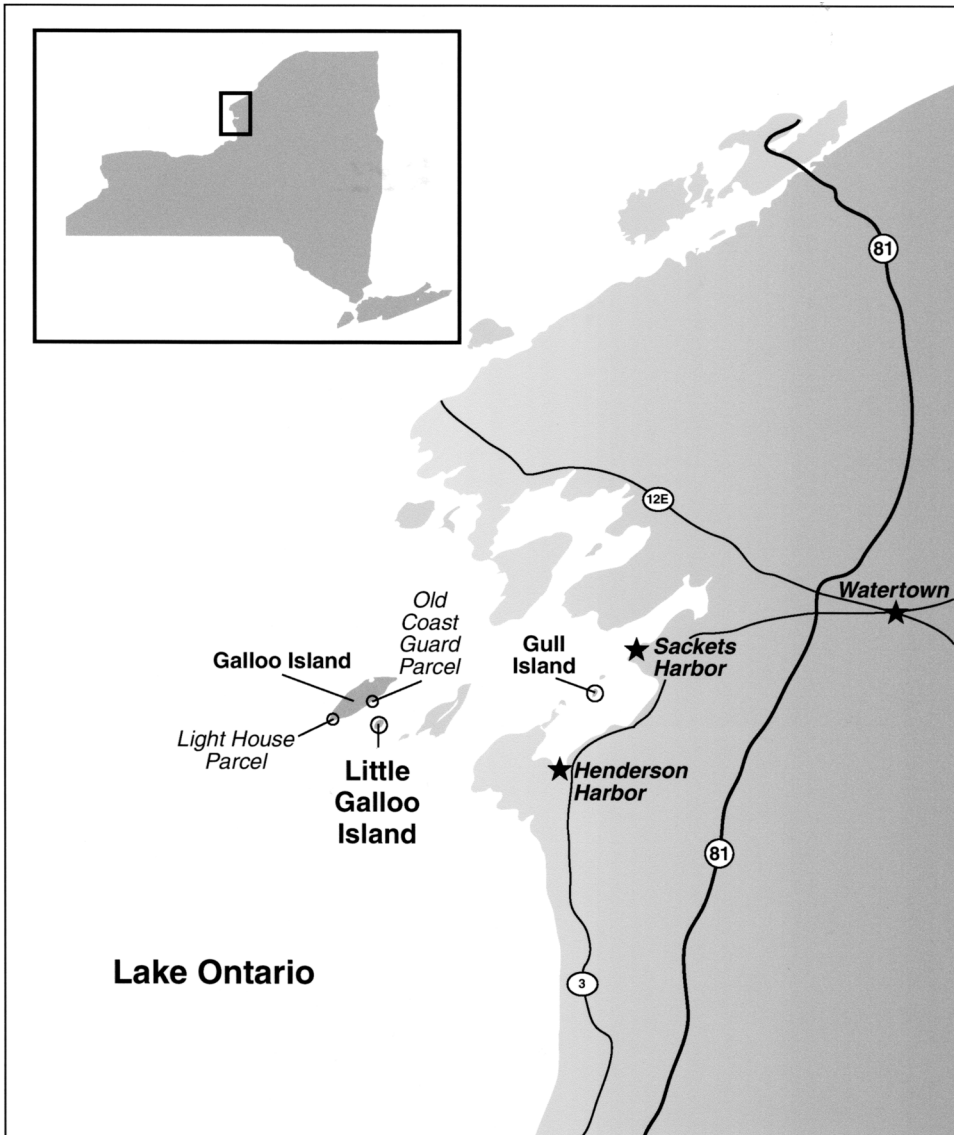


FIGURE 1 Location of the Lake Ontario Islands Wildlife Management Area (LOIWMA) and study communities along New York's Eastern Lake Ontario Basin. Illustration by B. J. Tefft.

variety of organizational and community settings, but the method is less common in natural resource management.

We identified process characteristics that enabled *social learning* among participants in the Lake Ontario Islands Search Conference. We discuss these attributes by integrating theory with empirical evidence from the LOIWMA planning experience. Understanding process attributes that facilitate learning can aid managers in design of participation processes that enhance public learning and empower action. These attributes may differ from one context to another. Their identification provides a basis for others to build upon. We also investigated social learning's contribution to community-based co-management in two requisite domains: identification of common purpose and transformation of relationships. The results enhance understanding of social learning for collaborative management involving natural resource agencies and local communities.

## Social Learning Contributes to Comanagement: A Conceptual Framework

Comanagement has been applied in the management of fisheries, parks, and protected areas, forests, wildlife, rangelands, and water resources (Conley and Moote 2001). Proponents of comanagement describe numerous potential benefits compared with management by a central agency. These include increased effectiveness of management, greater acceptability of management actions, enhanced understanding of natural and human systems, increased trust between government agencies and stakeholders, reduced enforcement expenditures and transaction costs, and increased public awareness of conservation issues (Pinkerton 1989; Borrini-Feyerabend 1996). Our research focused on *community-based comanagement*, which refers to a partnership in which governmental agencies and local communities (including resource users, local governments, non-governmental organizations, and other stakeholders) negotiate and share, as appropriate, the responsibility for management of a specific area or set of resources (adapted from IUCN 1997).

Several authors emphasize the need for learning in the development of collaborative management. With respect to fisheries co-management, Pinkerton (1994, 2374) claims, "Success is more likely if a social learning process occurs among different stakeholders." Borrini-Feyerabend and colleagues (2000, 12) assert that interactive learning, which they define as "enhancing common knowledge, awareness and skills by thinking, discussing and acting together," is "crucial for co-management initiatives." Wondolleck and Yaffee (2000, 132) state that a key step in collaborative initiatives is "committing to a process of mutual learning in which participants agree that they individually do not have all the answers."

Social learning is also cited as an essential process for addressing the complexity and uncertainty inherent to natural resource management (Lee 1993; Dryzek 1997; Röling and Wagemakers 1998). Yet, a widely held conceptual understanding of social learning is lacking. Parson and Clark (1995, 429) explain, "The term *social learning* conceals great diversity. That many researchers describe the phenomena they are examining as 'social learning' does not necessarily indicate a common theoretical perspective, disciplinary heritage, or even language." Drawing on a variety of public deliberation and social learning literature, we define social learning as learning that occurs when people engage one another, sharing diverse perspectives and experiences to develop a common framework of understanding and basis for joint action.

One mechanism through which social learning can occur is deliberation. Deliberation describes one of several genres of general processes, such as communication or education, by which agencies interface with the public. Deliberation includes any process to communicate, raise and collectively consider issues, increase understanding, and arrive at substantive decisions (NRC 1996). Deliberation can occur in many formats from public meetings to alternative dispute resolution techniques. Deliberative processes can succeed or fail, empower action or fuel resignation, enhance public learning and democratic practices, or rationalize decisions already made (Forester, 1999). At its best, public deliberation:

> allows people to discover latent *public* values that they have in common with others, and in the process to create new public values. Together, citizens begin to define targets of voluntary action, to identify what they value most about the community, and to uncover goals and commitments that transcend their narrower self-interests. (Reich 1985, 1637)

Public deliberation can lead to social learning that enhances the knowledge available for community-based co-management. Scientific knowledge is necessary for sound natural resource management but is not sufficient. Determining management goals also requires knowledge that reflects public values, providing purpose and guidance for policy and action (Korten 1981; Reich 1985; Yankelovich 1991). When deliberation enables social learning, individuals and groups evolve in their understanding of issues, relevant facts, problems and opportunities, areas of agreement and disagreement, and—perhaps most importantly—their own values and those of others (Yankelovich 1991; Mathews 1994; NRC 1996). These all contribute to the identification of common purpose, which provides guidance for comanagement initiatives.

Social learning also facilitates comanagement through the transformation of relationships. Pinkerton (1989, 29) proposes that "the successful operation of comanagement ultimately rests on the relationships among human actors." Social learning contributes to collaboration by creating new relationships, building upon cooperative relationships, and transforming adversarial ones. These changes occur as people learn about the character and trustworthiness of others and develop new networks and norms of interaction that can enhance their capacity for joint action (Greenwood and Levin 1998; Forester 1999). Social learning involves what Forester (1999) terms "diplomatic recognition"—recognizing that others' interests are as legitimate as one's own. Mathews (1994, 235) explains, "*deliberation doesn't necessarily change personal positions, but it does change attitudes about opposing points of view*"(emphasis in original). Attitudinal accommodation may lead people to see new possibilities for working together that go undiscovered when issues are debated from polarized positions.

"Social learning … is intended to help improve the quality and wisdom of the decisions we take when faced with complexity, uncertainty, conflict and paradox" (Röling and Wagemakers 1998, 54). Recognizing the potential contribution of social learning to decision making with respect to fish and wildlife management in the Eastern Lake Ontario Basin, the New York State Department of Environmental Conservation (NYSDEC) engaged diverse stakeholders from local communities in natural resources planning through the Lake Ontario Islands Search Conference. Our study examined whether and how social learning occurred among participants in the search conference and its contribution to identifying common purpose and developing collaborative relationships, two requisites for comanagement.

## Human Communities and Natural Resources of the Eastern Lake Ontario Basin

The eastern Lake Ontario islands and adjacent shoals comprise an unique ecosystem that provides important habitat for warmwater fishes, colonial waterbirds, waterfowl, and shorebirds. Four parcels owned by NYSDEC constitute the Lake Ontario Islands Wildlife Management Area (LOIWMA): 43-acre Little Galloo Island, two parcels totaling 20 acres on neighboring Galloo Island, and one-acre Gull Island (Figure 1). Management planning for the LOIWMA in 2000 provided an appropriate context to explore a deliberative process for social learning. Management of the islands, which are used as breeding grounds by hundreds of thousands of colonial-nesting waterbirds, affects communities along the Eastern Basin shoreline in which sport fishing and associated tourism is central to the local economy and culture. Planning occurred amidst ongoing controversy over the impact of double-crested cormorants (*Phalacrocorax auritus*) on the sport fishery and alternatives for cormorant management. The situation involved complex, value-laden judgements and conflict about the adequacy of scientific knowledge and about basic goals and values (Schusler and Decker 2000). These characteristics required effective dialogue between technical experts and interested and affected citizens (NRC 1996).

This inquiry involved participants from several shoreline communities in Jefferson County, New York, as well as the urban center of Watertown. In particular, we focused on the waterfront communities of closest geographic proximity to the LOIWMA: Henderson Harbor and Sackets Harbor (Figure 1). Henderson Harbor is a waterfront community located in the Town of Henderson (population 1377) that relies heavily on the economic contribution of warm season recreational fishing. The harbor is also popular for sailing. The Village of Sackets Harbor (population 1386), a bedroom community for Watertown that is located in the Town of Hounsfield (population 3323), is a thriving tourist community that promotes its historical background and natural beauty.

Individuals in communities throughout Jefferson County agreed in interviews conducted during a preliminary situation analysis that the most important issues facing the region were economic. Employment in manufacturing is declining, while agriculture and tourism provide only seasonal income. Interviewees expressed a desire for economic development that is compatible with preserving the rural character of their communities, quality of life, and the environment. As a tourism professional noted: "[The challenge is in] balancing a respect for and protection of what we still have in environment and unique natural resources but bringing us up to speed with the rest of the economy in terms of re-developing the region" (Schusler and Decker 2000, 16).

## Selection of Methods

The design of any participatory process should be tailored to the needs of the specific situation. "The choice of deliberative methods requires diagnosing the ... situation and the nature of the knowledge needed, including the needs of the parties, the technical complexity and history of the issue, the extent of agency commitment, the availability of expertise in deliberative methods, and agency resources" (NRC 1996, 96). A variety of techniques can be used in deliberations that inform management decisions. Based on the results of a preliminary situation analysis (Schusler and Decker 2000), a search conference was selected because of its intentional design to foster learning among participants (Emery and Purser 1996).

A search conference enables participants to create a plan collectively and encourages participants themselves to implement it. Collective planning is aimed at solving problems directly relevant to the people involved. A search conference typically lasts about $2\frac{1}{2}$ days, ideally includes 25–75 participants, and involves a complex interplay between plenary sessions and small group work that creates valuable arenas for dialogue (Emery and Purser 1996; Greenwood and Levin 1998).

NYSDEC sponsored the Lake Ontario Islands Search Conference with organizational assistance from Cornell University's Human Dimensions Research Unit (HDRU). A steering committee assisted in developing the search question, selecting participants, and designing the event. The committee included individuals with interests in business, community development, planning, local government, tourism, recreation, conservation, and public land management, in addition to NYSDEC staff. Search conference participants were identified through a systematic process called a "community" or "peer reference system" (Emery and Purser 1996; Rich et al. 1999). The peer reference system involved an iterative process of asking knowledgeable members of the community for the names of other respected community members. This produced a matrix of potential participants that reflected community interests in natural resource conservation as well as community and economic development. Participant selection attempted to maximize the diversity of perspectives reflected at the search conference, as well as demographic diversity (e.g., age, gender, tenure living in region, private or public sector). The Lake Ontario Islands Search Conference (for greater detail see Schusler and Decker 2002) occurred 8–10 November 2000 in Henderson Harbor, NY and involved 32 participants. Professional facilitators from Cornell University's School of Industrial and Labor Relations managed the conference.

We used multiple qualitative data collection techniques to investigate social learning and its role in developing collaborative management. A team of four researchers observed (Adler and Adler 1994) interactions among participants during the search conference. An observation guide focused researchers' attention on the presence or lack of evidence of learning as well as specific process attributes (identified from literature) and general group dynamics. By using a team, one observer was present in every small group activity and multiple perspectives were obtained in observation of large group work. Additional data were collected through a mid-conference evaluation instrument ($n=25$) and an evaluation instrument ($n=22$) completed by participants at the conclusion of the event. The mid-conference evaluation was an open-ended instrument inquiring about participants' general impressions of the process to that point and, specifically, whether or not they felt able to express divergent views. The evaluation at the conclusion of the event focused on conference design, facilitation, and group composition and dynamics through close-ended questions.

We conducted structured telephone interviews with 29 of the 32 participants between 11 and 22 December 2001, approximately 1 month following the event. Three participants were unavailable during the interview period. However, our conversations with those individuals during and after the search event suggested that their perspectives on the search conference were not markedly different from those of participants interviewed. We asked participants to reflect on their search conference experience and assess the extent (not at all, slight, moderate, or great) to which they learned about elements identified through literature and the observation data. These were: factual information, concerns of other participants, areas of agreement and disagreement, problems and opportunities, actions to address problems or realize

opportunities, and community capacity. If participants reported learning to a moderate or great extent, we probed for examples that illustrated the nature of that learning. We also asked participants the extent to which the search group identified a common purpose and, for those responding affirmatively, to describe that purpose and how it came about. We inquired about the influence of interactions during the search conference on participants' relationships with one another. We asked participants about their intentions to remain involved in actions identified during the search conference and the factors contributing to their decisions about involvement. Finally, we asked participants what they found most and least valuable about the event; how it influenced their perceptions of NYSDEC; and whether NYSDEC should use the search format in the future, and, if so, in what types of situations.

Data from evaluation instruments and interview notes were analyzed by the senior author. Observation data supplemented this analysis. Debriefing meetings between the senior author and other members of the research team ensured accuracy in interpretation of other team members' observations. Using Folio Views software (Open Market, Inc. 1998) to organize data, we examined evidence supporting or refuting (Westphal 2000) elements of the conceptual framework used to guide this inquiry. Analysis also sought to identify elements missing from the preliminary framework. Convergent themes and outlying or divergent responses were identified. Participant-grounded and literature-based concepts were integrated to develop the conclusions reported below (Patton 1990). Our goal was to refine the theoretical framework based upon the experience of management planning for the LOIWMA. Below we present evidence that social learning occurred among participants, describe the process elements that contributed to learning, and discuss limitations of social learning and challenges to sustaining collaboration and joint action.

## Evidence of Social Learning

Participants interviewed reported learning (Table 1) about facts (90%), the concerns of other participants (100%), areas of agreement and disagreement among participants (79%), problems and opportunities (76%), and actions that might address

TABLE 1 Number of Participants Who Reported Learning to a Moderate or Great Extent in Post-Search Conference Telephone Interviews ($n = 29$ of 32 Participants)

|  | $n$ | $\%$ |
|---|---|---|
| To what extent did you learn new factual information? | 26 | 90 |
| To what extent did you learn about the concerns of other participants? | 29 | 100 |
| To what extent did participating alter your own concerns related to natural resource management in the Eastern Basin? | 15 | 52 |
| To what extent did participating help you see areas in which you agree or disagree with others? | 23 | 79 |
| To what extent were problems or opportunities identified that you were not previously aware of? | 22 | 76 |
| To what extent were actions identified to address problems or capitalize on opportunities? | 25 | 86 |
| To what extent did you become aware of the presence or lack of resources available to your community? | 12 | 41 |

problems or capitalize on opportunities (86%). Fewer (41%) learned about the presence or lack of resources (human and financial) available to their communities. Each interviewee provided examples of what he or she had learned. Participants generally gained a better understanding of issues associated with the islands' management, including learning about fish and wildlife resources, and potential community benefits from management of the islands, such as developing safe harbor or diversifying tourism promotion around bird watching, lighthouse viewing, and paddling sports.

Most importantly with respect to social learning, *all* 29 individuals interviewed following the event reported that they learned about the concerns of other participants to a moderate or great extent. A charter guide: "I was surprised at how many different entities had concerns, with totally different connections to the water." A biology teacher: "It opened my eyes to see where other people are coming from, different points of view." A business executive: "My horizons expanded in the area of concerns. Things that I had little or no knowledge of are now concerns." An environmentalist: "I gained an increased understanding of their issues and hope that they got an increased understanding of mine." Half of the interviewees (52%) reported that the search conference experience altered their *own* concerns related to natural resource management in the Eastern Basin (Table 1). In most cases, the experience expanded the types of concerns that participants considered in their views toward management beyond their own primary interests.

Most interviewees (93%) agreed to a moderate or great extent that the search conference contributed to identification of common purpose. When asked to describe that purpose, participants generally stated one or both of the following themes:

- Protection of natural resources whether for environmental, recreational, or economic benefits.
- Greater community cooperation, regional planning, and collective management of the Eastern Basin.

Several participants were surprised by the degree to which common ground existed among individuals with diverse interests in resource management. A tourism planner observed, "People found they had more common ground than anticipated." A community development professional described the common purpose as, "Protecting the basin and maximizing use and promotion in a sensitive way." He added that the group identified several ways to address this, including actions related to recreation, economic development, zoning, land use, and habitat protection. "The common denominator is to protect and yet use the resources." Common purpose had not been evident in previous participation processes around cormorant management nor in interviews that we conducted with 21 stakeholders in 1999 (Schusler and Decker 2000).

We also found limited evidence that relationship building occurred during the search conference. Collaborative relationships can develop in three ways: strengthening existing healthy relationships, transforming adversarial relationships, and creating new relationships. Two-thirds of interviewees (66%) reported that their existing relationships with others did not change as a result of participating in the search conference. Those who did experience changes (31%) described reestablishing relationships, strengthening relationships between public and private sectors, and generally getting to know others better through discussion and time spent together. In one case, the process helped improve an adversarial relationship between a biologist, who was an avid supporter of cormorant protection, and a charter captain, who was one of several men convicted in the illegal shooting of nearly 1000 birds in

July, 1998 (Revkin 1999). The biologist explained, "I sat at the table with one of the cormorant killers. There was give and take. And at the end, he smiled and kind of patted me on the arm and I did the same." No existing relationships were weakened as a result of participating in the event.

Over half of interviewees (59%) created new relationships. For some this merely involved exchanging business cards or placing a face with the voice at the other end of the telephone. For others it involved gaining greater familiarity with one another, working together, exchanging opinions, and learning about others' points of views. Collaborative relationships require trust. Twenty-four interviewees (83%) reported that through the search conference they gained trust in others to a moderate or great extent. They emphasized mutual respect, listening, and open-mindedness as essential to developing collaborative working relationships and enhancing trust. A few participants responded that they had established trusting relationships with others prior to this experience.

## Process Elements That Contributed to Learning

In addition to investigating whether social learning occurred among participants in the Lake Ontario Islands Search Conference, we sought to understand *how* social learning occurred in this deliberative planning event (Figure 2). Analysis of participants' reflections and our own observations indicated that learning was enabled through open communication, diverse participation, unrestrained thinking, constructive conflict, democratic structure, multiple sources of knowledge, extended



**Process Attributes that Foster Learning**

Democratic Structure
Open Communication
Diverse Participation
Multiple Sources of Knowledge
Extended Engagement
Unrestrained Thinking
Constructive Conflict
Facilitation

**Deliberation** — *that enables* → **Social Learning** — *contributes to*

→ **Common Purpose**

→ **Collaborative Relationships**

**Generates Knowledge About**

Facts
Values
Problems and Opportunities
Areas of Agreement and Disagreement
Alternative Actions
Possibilities for Working Together

**Requisites for Co-management**

Capacity

Knowledge

Common Purpose

Supportive Policy

Collaborative Relationships
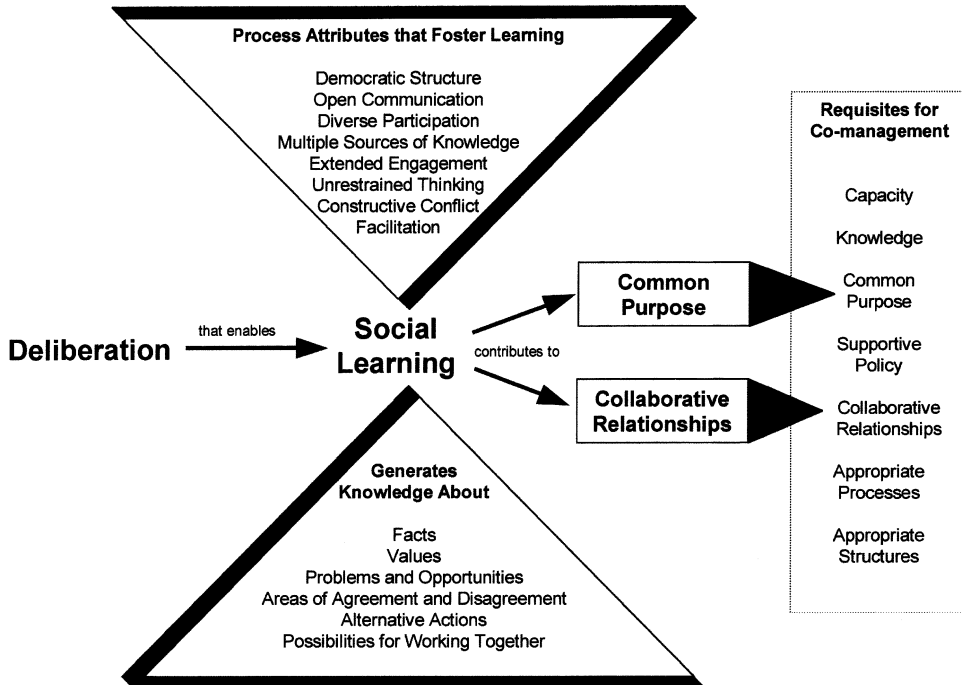
Appropriate Processes

Appropriate Structures

**FIGURE 2** Deliberation that enables social learning can contribute to community-based comanagement through identification of common purpose and development of collaborative relationships.

engagement, and facilitation. To illustrate we highlight aspects of the search conference that manifested these characteristics. Some elements of the search process exhibited more than one of these interrelated attributes but for the purpose of organized reporting we discuss them discretely here. By incorporating these attributes in the design of deliberative processes, natural resource managers can create valuable opportunities for social learning among stakeholders and between stakeholders and agency staff.

## Open Communication

"Learning occurs when an individual enters a process of reconciling newly communicated ideas with the presuppositions of prior learning" (Cranton 1994, 27). Communication that fosters learning requires dialogue—as opposed to monologue—that is free from domination and distortion (Yankelovich 1991). "Dialogue requires interpersonal skills, such as the art of listening, the ability to trust others and make oneself vulnerable to them, a willingness to suspend rank and material power, and a responsiveness to others' needs" (Friedmann 1987, 187). Working together in small groups provided the best opportunity for dialogue among participants. A community development professional at the search conference explained that small group work was "the best way to get to know people and what they think." An environmentalist observed, "[The groups were] small enough that you felt comfortable talking. People weren't allowed ... to meter or filter what others were saying. ... People felt free to disagree." While participants' skills in dialogue obviously varied, guidelines for interaction explicitly stated at the start of the search conference and modeled in the initial large group activity established norms for small group work.

## Diverse Participation

"Deliberation ... brings into consideration knowledge and judgments coming from various perspectives so that participants develop understandings that are informed by other views. At its best, deliberation becomes an interactive learning process for those involved" (NRC 1996, 74). Although the search group lacked demographic diversity (the group included only 5 women and no one below the age of 30), participants reflected a broad and varied range of interests in resource management (Table 2). This diversity of interests was achieved through the purposeful selection of participants using the peer reference system. This diversity enhanced learning by exposing participants to a breadth of viewpoints. Learning about the variety of interests in the Eastern Basin's natural resources led participants to recognize the legitimacy of views other than their own. An economic development professional

**TABLE 2** Diversity of Stakes Reflected Among Participants at the Lake Ontario Islands Search Conference

| | |
|---|---|
| Birders | Extension agents |
| Business owners | Kayakers/paddling enthusiasts |
| Charter boat captains | Local government officials |
| Community development professionals | NYSDEC staff |
| County planners | Recreational anglers |
| Educators | State parks staff |
| Environmentalists | Tourism professionals |

learned that "the interests were multiple and varied, and how dedicated each was to their cause." A business executive explained that the building of trust occurred through "[the] sense that others ... were able to establish their position—one that I felt didn't exist before. They were well-informed, able to intelligently and professionally project their opinions."

### Unrestrained Thinking

Often, resource managers request stakeholder input into a specific issue, such as cormorant management, or a specific objective, such as the desired size of the local deer population. In contrast, during the search conference, participants considered the system of focus, the islands, within their broader environment, the Eastern Basin. Doing so led participants to focus on impacts (Riley et al. 2002) or ultimate goals of management, which included sustaining a healthy environment, economy, and community.

Creating a shared history (Figure 3) laid the groundwork for creative, unrestrained thinking. Participants depicted along a chronological timeline major events and forces that had influenced the region. Asking participants to step back before going forward and to look broadly before focusing narrowly deliberately distracted them from their own narrowness of focus and enabled them to learn in ways otherwise prevented (Forester 1999). A retailer explained how thinking beyond participants' narrow self-interests contributed to identification of common purpose: "It seemed to be there from almost the beginning ... the timeline showed them all how they got where they are, both by seeing mistakes from the past and realizing what they still had that they didn't want to lose." The shared history revealed intricate links between the region's natural, historical, and cultural resources and tourism-based economy. It further became evident that everyone in the room had
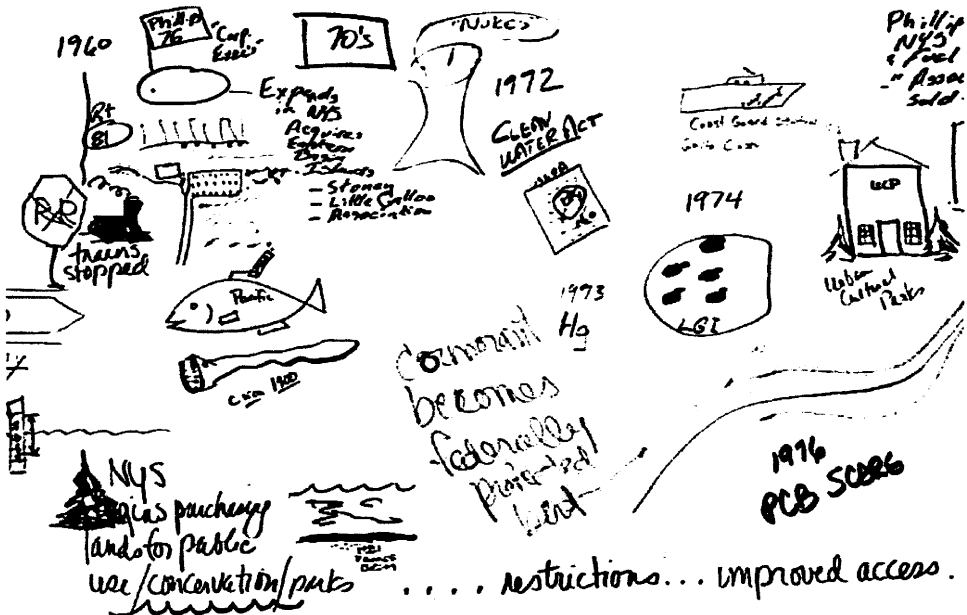


**FIGURE 3** The shared history revealed intricate links between the region's natural, historical, and cultural resources and a tourism-based economy. Photo by S. Sears.

relevant knowledge to contribute in its creation. Finally, discussing the shared history also began surfacing areas of agreement and disagreement.

### Constructive Conflict

"Rather than striving for consensus, a Search Conference focuses on identifying common ground. ... [The] process seeks to differentiate the points where participants agree—the area of common ground (which is normally much larger than expected)—from the points that evoke clear disagreement or irreconcilable difference" (Emery and Purser 1996, 39). This approach enabled participants with opposing views on cormorant management to progress in areas of common ground, such as education and tourism. A marina owner: "People who I've seen flare up before, might have raised their voices, but it never got out of hand. I saw people talking with each other who I didn't think talked." A sportswoman: "[We were] able to talk about areas of fundamental disagreement. Although [we] continued to disagree, [we] gained a lot of respect for one another." An education specialist: "[My] concerns were lessened about how the conference might end up being just a cormorant/anti-cormorant debate. ... [I] found that people were more broad-minded. ... There was a willingness to see other options for tourism, recreation, and economic growth in the area." Opportunities to express conflicting points of view without derailing the process allowed participants to identify areas in which they could constructively focus upon shared values and other areas in which further deliberation, negotiation, or conflict resolution would be needed.

### Democratic Structure

The search conference followed a structured sequence of activities (Figure 4). However, unlike more authoritative approaches used by agencies in their interactions with citizens, within each of these activities participants guided the direction of the process by determining the content of discussion and deciding upon priorities to be addressed in action planning. Such a process of "structured unpredictability" (Forester 1999) required the agency to recognize that it did not know a priori everything that would be relevant to citizens nor what options would be discovered in the process of listening and responding to each other. Some public meetings are so structured, predictable, and predetermined that little if any learning occurs. In contrast, the democratic structure of the search conference allowed for surprise and the exploration of new possibilities for working together (Forester 1999).

### Multiple Sources of Knowledge

"Social learning ... relies on a process that, by combining two kinds of knowledge—personal and theoretical or 'processed' knowledge—yields an understanding greater than either could have produced by itself" (Friedmann 1984, 192). In the search conference, "each participant attends because of their potential for contributing knowledge and expertise about some piece of the overall puzzle" (Emery and Purser 1996, 35). Fish and wildlife managers from NYSDEC did not serve as technical experts but rather were full participants in the same vein as all others. This was evident throughout large and small group work and was important for two reasons. First, fish and wildlife managers provided valuable information about the Eastern Basin's natural resources, while other participants shared equally relevant knowledge from their own experiences about the region's natural resources, history, culture, and
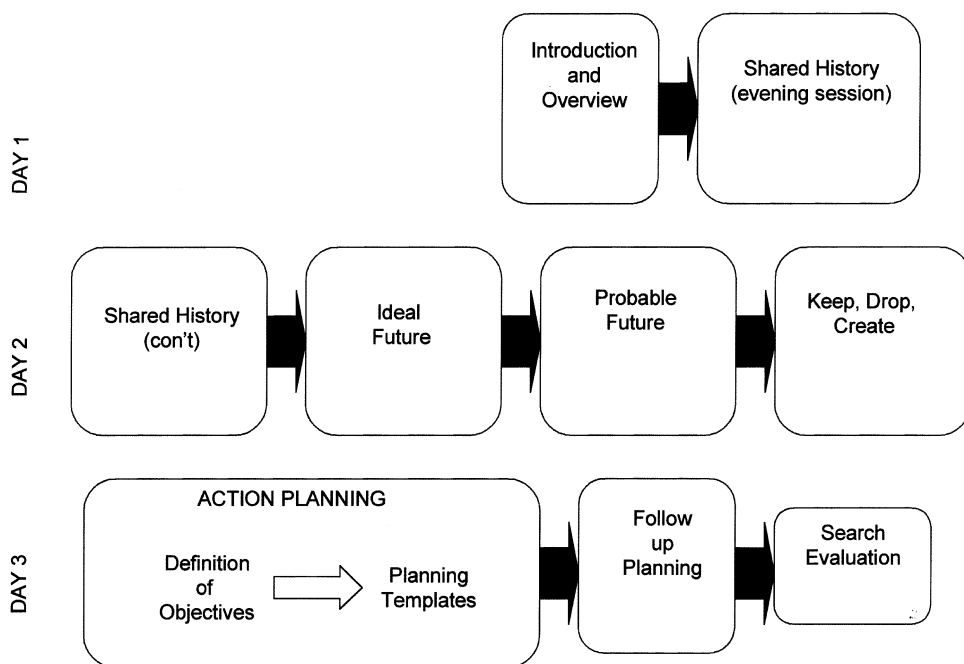
**FIGURE 4** Stages of the Lake Ontario Islands Search Conference. Adapted from Martin and Rich (1998).

economy. Second, identifying common purpose required agreeing upon shared ideals, which could not be evaluated using technical and scientific knowledge alone. As Korten (1981, 613) explains:

> The key to social learning is not analytical method, but organizational process; and the central methodological concern is not with the isolation of variables or the control of bureaucratic deviations from centrally defined blueprints, but with effectively engaging the necessary participation of system members in contributing to the collective knowledge of the system and in generating policy choices.

### Extended Engagement and Informal Interactions

Working together over the course of $2\frac{1}{2}$ days offered participants the opportunity to engage one another in greater depth than permitted in meetings of shorter duration. Several participants attributed the development of collaborative relationships and building of trust to the "format where we stayed working with people all day long through work sessions, [both] large group [and] small group." A NYSDEC participant explained, "[I] knew what stakeholder group they were from to start with and had dealt with them before, but over $2\frac{1}{2}$ days, especially in the small groups, [I] got a much better understanding of their true feelings."

Participants also learned about one another on a more personal level during informal interactions over meals and breaks. Such informal encounters "enable participants to develop more familiar relationships or to learn about one another

before solving the problems they face'' (Forester 1999, 131). An environmentalist: ''A biologist, fisherman, tourism [specialist], and tree hugger like myself all sat around the table together at dinner talking.'' An extension educator: ''The whole format was useful. The time taken to build rapport and trust where there was some suspicion resulted in a community that will accomplish something.''

## Facilitation

Participants also confirmed the value of facilitation. Professional facilitators from Cornell University's School of Industrial and Labor Relations managed the search conference. A local government official: ''[The] facilitators were excellent.'' The involvement of a neutral entity in this role lent credibility to the process. Participants themselves facilitated small group work with guidance from the search managers.

These characteristics of the deliberative process—open communication, diverse participation, unrestrained thinking, constructive conflict, democratic structure, multiple sources of knowledge, extended engagement, and facilitation—created an atmosphere in which participants could share diverse views and opinions, respectfully question each other, and explore complex and challenging issues with sensitivity and humor.

## Limitations of Social Learning

Not all learning is positive. While a strength of the search conference was participants' enhanced understanding of others' interests and concerns stemming from different worldviews, participants occasionally shared incorrect technical information or developed negative perceptions of others. ''Mistaken learning'' of this sort could impede collaborative relationships. For example, NYSDEC participants observed some instances of inaccurate references to technical information about fish and wildlife resources. The process did not always provide appropriate opportunities for agency staff to correct perceived inaccuracies. This observation emphasizes the need for social learning as an ongoing process in which participants can assess the quality of information shared and reconcile misunderstandings, as well as adapt management goals and collaborative initiatives as they gather new information and learn from experience.

Deliberation could impede collaboration when interactions produce or confirm negative perceptions of other stakeholders. We found this on rare occasion in participants' comments during telephone interviews following the search conference. An education specialist ''gained first hand knowledge of the hate and misinformation concerning cormorants.'' A charter guide stated, ''I found the ... bird people to be very touchy and not open to discussion on the cormorant issue. They seemed closed to open discussion about physically doing something about the birds. Most of us in favor of control are willing to listen more.'' Despite these negative impressions, both participants anticipated being further involved in actions identified during the search conference.

In any deliberative process, the risk also exists that more powerful interests may co-opt the less powerful. Pelletier and colleagues (1999, 103) found that ''local deliberative processes may produce outcomes that are neither fair nor efficient and that reflect the values and interests of certain stakeholders more than others, even in the absence of overt conflict.'' Such outcomes may occur when the values and interests of some parties are ''subordinated, knowingly or unknowingly, to those of more powerful, articulate or persuasive actors'' (Pelletier et al. 1999, 105). A marina

owner described behavior that could be a symptom of cooptation: "People seemed to go out of their way to agree even though some participants had strong feelings on one side of an issue." However, aside from this single observation, we have no evidence that cooptation was a concern during the Lake Ontario Islands Search Conference.


## Does Learning Yield Action?

Twenty-four interviewees (83%) stated that they intend to remain involved in actions identified during the search conference. Others cited a lack of time or viewed themselves as a resource but not as a primary participant in implementation of actions. Participants' motivations for continued involvement stemmed from their professional positions, roles as community leaders, and personal ties to the region. A tourism planner: "It's my job." A charter guide: "I live, work, and depend on the lake and the shorefront for my living, my home, everything." Social learning during the search conference built upon participants' existing commitment to their communities to generate enthusiasm about the possibilities for working together. An educator: "[Participating in the search conference] strengthened my concern to do something." The tourism planner above added that "seeing others enthusiastic about helping and willing to work" contributed to his own willingness to be further involved.

Participants demonstrated their intent to remain involved by attending a follow-up meeting held 16 May 2001 in Chaumont, NY. Nineteen of 32 participants (59%) attended. Nearly all of the participants unable to attend the follow-up meeting expressed interest in remaining informed and involved in ongoing efforts. NYSDEC incorporated 10 of the 18 actions identified during the search conference into a draft management plan for the Lake Ontario Islands Wildlife Management Area (LOIWMA). Most of these actions reflected ideas that NYSDEC staff had considered prior to the search event. However, they could not assess whether to include them in the LOIWMA plan without greater knowledge about public interest in seeing them realized and possibilities for cooperation in their implementation. Actions identified during the search conference but not included in the draft LOIWMA plan (e.g., creating a council of governments to increase cooperation in community planning) were outside the scope of NYSDEC's mission and more appropriately pursued by other lead entities. Non-NYSDEC participants had also begun implementing short-term actions or gathering information for long-term goals in the areas of education and tourism. However, at the meeting's conclusion, it remained unclear how the group would continue working together.

A weakness of this search conference design that became clear during the follow-up meeting was the lack of commitment of a local change agent, other than NYSDEC, to lead further action in community-based initiatives identified during the search. Greater efforts from initiation of the design process to clearly communicate expectations and develop ownership and commitment among the broader group of participants were needed. Possible ways to have accomplished this include: (1) more clearly communicating with members of the steering committee to assess whether and how their respective organizations could assume leadership following the search event, (2) broadening the search question to incorporate better concerns of entities beyond NYSDEC, (3) involving additional entities, such as local governments or extension organizations, in sponsorship of the event, and (4) devoting more time

during the search conference itself to develop mechanisms for implementing action plans.

Observation of the follow-up meeting emphasized that social learning is essential but not sufficient for comanagement. Appropriate structures and processes are needed to sustain learning and enable joint action. During the search conference, participants suggested the formation of an Eastern Basin Working Group, which would include one representative from each action planning team, as a mechanism for continuing communication and coordination among the larger search group. However, time ran short in discussion of how this might occur and no specific commitments were made. Given competing demands on participants' time and energy, such a structure is unlikely to form without intervention by a local change agent. Developing appropriate local institutions for further collaboration will require leadership and a commitment of human and financial resources. At this point, despite participants' enthusiasm to continue working together, it is unclear which local entity might provide the organizational capacity to facilitate further collaborative efforts. Additional research could help identify the types of structures and processes that would enable continued collaboration. Understanding structures and processes for joint action so that natural resource managers and stakeholders can realize concrete management outcomes from their investments in deliberative processes is a critical piece of the co-management puzzle requiring further work. In the absence of ongoing collaboration in implementation of action plans, research could assess whether social learning becomes disempowering if participants' expectations for joint action are raised but then not met.

## Conclusion

Social learning is increasingly cited as an essential component for comanagement of natural resources. Yet no common conceptual understanding of the term exists and little empirical research has investigated this phenomenon. The results of this study enhance knowledge about social learning, what it is, how it occurs, and its potential and limitations for collaborative management. We conclude that deliberative processes can be designed to foster social learning among agencies and stakeholders. By gaining a greater understanding of issues around resource management and recognizing as legitimate the interests of other stakeholders, participants in the Lake Ontario Islands Search Conference identified a common purpose to guide management efforts and, to a lesser degree, developed collaborative relationships. Eight process characteristics fostered social learning in this case: open communication, diverse participation, unrestrained thinking, constructive conflict, democratic structure, multiple sources of knowledge, extended engagement, and facilitation. Incorporating these attributes into the design of stakeholder involvement processes can create opportunities for people to engage one another, sharing diverse perspectives and experiences to develop a common understanding and basis for joint action. Social learning is necessary but not sufficient for the development of collaborative management. Social learning may be a process by which other requisites for comanagement, including capacity, appropriate processes, appropriate structures, and supportive policies, can be developed or negotiated.

This inquiry examined social learning within the context of a deliberative planning event involving 32 participants. Research that investigates how social learning occurs at higher levels of social aggregation is also needed (Röling and Wagemakers 1998). In addition, future research in the Eastern Basin should explore

the sustainability of the energy and activity generated during the search conference. For example, what local institutional structures are needed to sustain action? What processes of deliberation, communication, and education are necessary for ongoing learning? What is the meaning of "trust" and how does it develop in the context of collaborative initiatives? And, how does social learning diffuse through the broader community?

As Wondolleck and Yaffee (2000, 224) state, "An agency's long-term capacity for collaboration requires ongoing experimentation and an explicit process of learning from the experiments." The Lake Ontario Islands Search Conference provided an initial step in learning about the potential for collaboration between NYSDEC and local communities in the Eastern Basin. We hope it serves as a foundation for ongoing efforts among participants to learn further about the place they share, one another, and possibilities for working together toward a desirable common future.

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