Chapter 7

PUBLIC VALUES, OPINIONS, AND EMOTIONS IN RESTORATION CONTROVERSIES

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Ecosystem restoration efforts are increasing throughout the United States and in many places around the world. Many of these efforts are undertaken with the support and cooperation of local residents, interest groups, and government agencies. However, some restoration efforts are meeting with public resistance, and conflicts between various individuals and groups are resulting in controversies about whether and how ecological restoration should be carried out on public lands.

The Chicago restoration controversy, described in the Introduction and Helford's chapter in this volume, is a case in point. Conflicts over the management of public forest preserve lands in the Chicago region have evolved into a highly contentious debate, pitting public land managers and ecological restoration volunteers against restoration critics. The controversy temporarily halted restoration activities in two counties, and, as this is written, it is still having major effects on how, where, and to what extent activities can proceed in some areas.

As is the case in many controversies, the conflict inherent in the Chicago situation is multifaceted. Our understanding and ultimate resolution of it requires examination by different disciplinary and methodological perspectives within the social sciences and humanities. In the previous chapter, Reid

Helford examines the dimensions of expertise and activism within restorationist and opponent groups from a sociological perspective, using ethnography and participant observation to understand the conflicts experienced by those directly involved in the controversy. In this chapter we take a psychological perspective by examining the values and perceptions that give rise to controversial ecosystem restoration activities, as well as the emotions that result from such controversies. Within this context, we use a survey-based approach that employs a scenario of a hypothetical restoration controversy to understand how average metropolitan residents (i.e., those not directly involved in the controversy) perceive, value, and react to conflicts concerning the restoration and management of urban natural areas.

We begin by placing the study within a more general psychological framework of environmental values and value conflict. We then describe the results of an analysis of news articles and other public documents that we conducted, looking specifically at the Chicago restoration controversy to develop a comprehensive list of value-based arguments for and against restoration. We apply this knowledge to our survey of a random sample of Chicago metropolitan residents, and we describe and discuss the methods and findings related to participants' decisions and emotions, opinions about human interventions in ecosystems, and opinions about restoration practices and policies. We conclude with some general suggestions for dealing with issues raised in the Chicago controversy and other cases involving conflicts over environmental values.

Values and Emotion in Environmental Conflict

Recent research efforts have identified and explored the environmental values held by various members of the public as a means of understanding the basis for their specific environmental concerns and conflicts, improving management decisions for public lands, and finding areas where competing users may have common values (Kellert 1996, Kempton et al. 1995, Vining and Tyler 1999). Vining (1992a, 1992b) argues that emotionality is a necessary and commonplace characteristic of public involvement in issues of environmental values, for a number of reasons. Psychologists have discovered that emotion is not easily separated from cognitive processes. Emotion is stored along with other information in memory and helps us interpret, summarize, and organize information. Emotion is also an effective motivator, often spurring individuals to speak out on issues of concern to them. In addition, emotion performs a highly effective communicative role through facial expression, body posture, and voice tone—means that are in many ways more expressive than verbal communication. Finally, emotion helps to reveal value conflict. When discrepancies between actual and desired values arise, emotion results.

Historically, public land managers have tended to discount the importance

of value-laden and emotional responses of the public to land management plans and projects (Vining and Tyler 1999). But managers are now beginning to understand the importance of values and emotions as rational motivators for the public to become involved and to voice their concerns. After all, if people did not care about an issue and feel somehow threatened by the decision at hand, they would not express their concerns with great emotion (Creighton 1983, Vining 1987, 1992a, 1992b).

Values, Emotions, and the Chicago Restoration Controversy

Within this general psychological framework, we began to look closely at the environmental values and emotions being expressed in the Chicago restoration controversy. Informed by work by Gobster (1997), and Schroeder (1998), both of whom were studying aspects of restoration and restoration opposition in Chicago (see the Introduction and Schroeder's chapter in this volume), we undertook our own analysis of the controversy as expressed by the media and the public in hearings and other forums. Our purpose in this analysis was to develop a list of value-based arguments for and against restoration to include in our survey.

In our analysis we found that one of the most common concerns raised by restoration opponents was the cutting and clearing of existing mature trees. Residents and visitors complained about seeing rows of stumps instead of groves of trees and about the resulting changes to their community's character. As one nearby resident said of a restoration project at Belleau Woods in DuPage County, "[T]here's been an awful lot of cutting. It's nice woodland there. It was always nice to have that claim to fame" (Zalusky 1996). But restoration supporters had a different perspective. One of the forest managers said that "cutting trees is only one small part of it. . . . The overall aim is to increase plant and animal diversity with more native growth that can sustain a balanced system far into the future" (Coffey 1996). Thus, both supporters and opponents of restoration wished to have natural environments in the metropolitan area. However, nature meant different things to different groups. Supporters of restoration preferred prairies and savanna as they may have existed in pre-European-settlement times, while opponents preferred the contemporary urban forest.

Restoration supporters contended that instead of only a few kinds of wildlife, vegetation, and habitat, there would be millions of wildflowers, hundreds of birds, and dozens of native animals. Opponents perceived the likely outcome differently, refusing to believe that biodiversity would or should result from restoration. "This is nature's process of eliminating certain species. If that were not the case, we'd still have dinosaurs" (Hodson 1996).

Restoration supporters emphasized the necessity of using prescribed fire and herbicides in controlling exotic plants and stressed the safety precautions taken in their application. Opponents asserted that using fire to maintain

prairie and savanna would worsen the problems of asthma sufferers, endanger houses and property, and harm animals, and worried that the types and concentrations of herbicides being applied were toxic to birds, fish, mammals, and humans.

The cost of restoration projects was also at issue. Opponents of the DuPage County Natural Areas Management Plan objected to spending taxpayers' money to cut down trees. A Burr Ridge resident argued that "it needs to be scaled back and slowed down; $11.6 million is a lot to spend for what nature does for free" (Hodson 1996). In contrast, restorationists in DuPage and elsewhere cited the substantial cost savings through volunteer stewardship efforts, along with the many other personal benefits restorationists received through participation.

Cutting of trees was also an important aesthetic and land value issue for nearby residents. Existing trees and brush helped to buffer unpleasant scenes such as traffic and commercial buildings that were considered eyesores. Residents claimed that cutting trees and brush would remove this visual buffer and lower their property values. In contrast, restoration supporters argued that restored prairie and savanna ecosystems had a unique beauty and that restoration helped to reclaim an important part of Illinois's natural heritage as the Prairie State.

These and other arguments that we documented through our analysis formed the basis of the value-based statements for and against restoration that appear in Tables 7.1 and 7.2. By developing concise summaries of these arguments, we hoped to provide the social context for participants to understand ecological restoration and respond thoughtfully to our survey questions.

Method

The purpose of the study reported here was to examine Chicago-area residents' perceptions of restoration practices, as well as their decisions and emotional reactions regarding a restoration scenario based on the Chicago controversy. We were particularly interested in the reactions and concerns of residents who were not directly involved in the restoration controversy, but who may have learned enough about resource conflicts to develop beliefs about the importance of natural areas and the role of government in providing such areas. We were also interested in perspectives on management goals and priorities for publicly owned natural areas and in the respondents' own ideas about conflict resolution in the political process.

A questionnaire was prepared to address public responses to an environmental restoration scenario. The scenario, presented in the accompanying boxed text, described a hypothetical controversy surrounding a restoration. Such scenarios are often used in research on reactions to environmental issues

Hypothetical Situation

The fictional town of Hillendale is a suburb of a large Midwestern city. Its population is 38,000. As an older suburb, Hillendale is largely developed and is surrounded by other suburban communities. However, years ago Hillendale's founders and others in Forsythe County set aside open space reserves for preservation and for the recreational use of the public. These preserves include Shady Woods, which offers nature trails, picnic areas (including the Rustling Picnic Grove along the Babelin River), playgrounds, and a nature center.

The Shady Woods Preserve is almost a square mile in size. It is used as the site of a day camp during the summer months. The Rustling Picnic Grove is a favorite place for company and service club picnics. During the springtime, the Hillendale Birds n' Bees Club uses Shady Woods for bird watching and nature walks.

Portions of Hillendale located near Shady Woods are considered to be among the best neighborhoods in the community. Residents of the neighborhoods near Shady Woods have easy access to its playgrounds and nature trails (see map).

Ecologists at the nearby Learned Community College recently discovered some maps from the early 1800s that indicate that much of Forsythe County was a prairie with oak savanna areas along its creeks and rivers. Savanna is a grassland with scattered trees or clumps of trees. Both prairie and savanna are fire-dependent plant communities that have diminished due to human settlement and fire suppression.

Environmental groups have become alarmed by the almost complete loss of prairie and savanna habitat in the state and the endangered status of many prairie/savanna species. Based upon these old maps and the presence of remnant species found in the area, a group from a local environmental club called Grasslands Forever determined that the Rustling Picnic Grove would be an excellent site for savanna restoration.

In recent years, Shady Woods has been affected by a fast-growing nonnative shrub species known as thornybush. The thornybush has taken over large portions of the preserve, making many areas impassable and crowding out native tree species of the area. The mature native trees in the preserve are reaching the end of their natural lifespans. Foresters believe that these trees will disappear without human help because the thornybush and other species prevent them from becoming established on their own.

Representatives of the local open space management agency (which owns and manages the Shady Woods Preserve), working along with several volunteers from Grasslands Forever, began savanna restoration efforts at the Rustling Picnic Grove in the late 1980s. These restoration efforts included thinning of native trees, removal of nonnative trees and brush, periodic controlled burning of the undergrowth, application of herbicide on the hardy thornybush plants, sowing of savanna/prairie plant seeds, and planting of savanna/prairie grasses and flowers.

The efforts of the agency and Grasslands Forever over the past several years have been slow but sure. The savanna at the Rustling Picnic Grove is returning, and last spring volunteers were excited to find a small population of the endangered native sundarter orchid in the restoration area. The restoration effort at the Rustling Picnic Grove began to attract attention from elsewhere in the metro-

politan region. The restoration effort was even featured in the national magazine *Ecology Today*. Volunteers reported that their participation in the restoration efforts had given a positive focus to their lives. They felt gratified by the visible changes to the area and by the camaraderie of working with other volunteers for a common cause.

But not all of Hillendale was as pleased. Visitors to the grove noticed fewer trees and bushes. Those who had previously enjoyed walking their dogs in the Rustling Grove area were faced with trail closures due to restoration efforts. Some residents said that their favorite trees had been lost or harmed. Many of the neighbors wanted to know why they did not get to vote on whether and where restoration took place. Some felt that their local tax dollars could be put to different use.

A group of neighbors organized themselves into a group called Save the Grove. They opposed the restoration efforts, as did a group of citizens against local taxes, animal rights activists, and two ecologists who disagreed with the restoration methods being used. The efforts of the Save the Grove alliance received extensive favorable coverage in one of the local newspapers. An influential alderman for Hillendale championed the alliance's cause as an effort to protect property values and to reduce possible impacts from controlled burning and herbicide use.

The two sides began to battle in the local press and to stage protests and counter-protests. There were threats of lawsuits, political revenge, and ballot initiatives. The arguments that were used by each side are shown on the next two pages (see Tables 7.1 and 7.2).

The city council of Hillendale and the board of directors of the Open Space Agency want public input. Alternative solutions being considered include:

1) stopping the restoration efforts permanently
2) continuing the restoration efforts as currently conducted
3) placing a moratorium on the restoration efforts until a thorough study of the issues can be conducted
4) expanding the restoration efforts to encourage further recovery of savanna and prairie environments
5) other compromise solutions, not yet identified

and serve to ensure that research respondents have information on the issue in question. Like the arguments for and against restoration discussed in the previous section, the scenario used in this research was developed through extensive review of public documents on the Chicago restoration controversy. Although it is a hypothetical description of a restoration controversy, it was modeled very closely after the events in Chicago.

Respondents were asked to read the scenario and the list of arguments for and against restoration (Table 7.1, Table 7.2) and write a brief essay on how they would address the controversy. Listed at the end of the scenario were five possible solutions that participants could use in part or whole as the basis for

Table 7.1. Summary of Arguments in Favor of Restoration

Argument	*Explanation*
Ecological Purity	Restoration can return an ecosystem to a state closer to what it was prior to European settlement or to a state prior to more recent changes in species composition.
Species/Ecosystem Diversity	Restoration can improve species and ecosystem diversity. This can be accomplished by removing competing nonnative species and by introducing the desired species.
Reclaim Threatened Ecosystems	Restoration can reintroduce or strengthen ecosystem types that may be threatened and diminishing in distribution or quality.
Stop Degradation	Restoration efforts can help stop or retard degradation in plant or animal species composition or in species health, and can ameliorate erosion.
Reclaim Natural Heritage	Restoration may return an area to a prior historic or prehistoric condition, for purposes of preserving environmental heritage.
Preserve for Future Generations	Restoration may ensure that certain ecosystems or species types are present in a particular area for future generations to appreciate.
Educational	Restoration may provide examples for community education or for seeking scientific study.
Benefits to Volunteers	Restoration volunteer efforts provide profound psychological and social benefits for the volunteers.
Beauty of Restored Ecosystems	Restored ecosystems, such as prairies and wetlands, have a certain beauty or aesthetic aspect that is appreciated.
Remove Invasive or Troublesome Species	Restoration can remove or minimize the effects of plant or animal species that are nonnative, extremely invasive or aggressive, or otherwise troublesome. Examples include the kudzu vine, pampas grass, and European buckthorn.

their written decision. After writing the essay, respondents were asked to answer a series of closed-ended questions dealing with the emotions they experienced during the reading and decision-making process, their perceived importance of different reasons for attempting restoration, and their opinions on various restoration practices. Other questions asked respondents about their experiences with restored areas, perceived scenario bias, and various personal characteristics.

Questionnaires were mailed to a sample of 200 residents of Cook and DuPage Counties, the two counties at the locus of the restoration controversy. We selected respondents from directories of the two counties using a stratified random technique. Those who did not respond to the first mailing received a postcard reminder and up to three repeat mailings. We offered payments of $5

Table 7.2. Summary of Arguments Against Restoration

Argument	*Explanation*
Tree Removal	Cutting or damaging mature trees is objectionable because of the visual, microclimatic, and biological benefits they provide.
Animal Harm	Removing, harming, or killing animal species (through extermination efforts, herbicide use, loss of preferred habitat, or con trolled burns) is objectionable.
Let Nature Take Its Course	Restoration efforts get in the way of how outdoor environments would develop on their own. People should not disturb nature and should just let it take its course.
Change to Wooded Areas	Change to wooded areas (due to prairie, savanna, or woodland restoration) is objectionable because these are valuable areas in their own right and have recreational, visual, and microclimatic benefits. Homes near wooded areas may also have higher property values.
Change in Recreational Opportunities	Restoration efforts interfere with recreational opportunities while restoration is under way. The restored environment may be less useful for some recreational purposes, such as hunting and camping. Other recreational uses, such as horseback riding, may not be permitted in restored areas.
Fire Hazard	Controlled burns associated with restoration efforts may present a fire hazard to nearby property.
Air Pollution	Smoke from annual controlled burns and increased dust during plant removal and planting efforts result in temporary local increases in air pollutants.
Health Hazard from Herbicide Use	Use of herbicides to suppress invasive species may be harmful to humans or other animals coming in contact with these chemicals.
Financial/Resource Limitations	Despite the use of volunteers, restoration efforts can be costly, inefficient, and time-consuming. Public funds would be better spent acquiring additional open space lands or in addressing other needs.
Aesthetics	During certain stages, restoration efforts may result in a visually unattractive area.
Scientific Uncertainty	Ecologists and other scientists often do not agree on what an environment should be restored to and how this should be done.

for return of the completed survey and included business reply envelopes with each questionnaire.

This procedure resulted in a final response rate of 33 percent ($N = 66$). In a telephone follow-up, the majority of the seventy-five nonrespondents we were able to reach said they did not respond to the mail survey due to a lack

of time or interest. Six people we contacted in this manner volunteered to complete the survey by phone (minus the scenario). We found no statistically significant differences between their answers and those of people who completed the survey by mail, so we combined their responses with those of the mail sample in the appropriate subsequent analyses. Although this comparison was one indication that our sample did not suffer from nonresponse bias, thirteen individuals in the phone follow-up also stated that they had not responded due to the length of the questionnaire. The length and demanding nature of the survey may have biased the sample in favor of more educated respondents, as 85 percent indicated having at least some college education. Readers thus should weigh these factors in interpreting the study results.

Results and Discussion

Despite our attempts to be as unbiased as possible, we recognize there is no truly neutral information. We asked respondents to rate the amount of bias they perceived to be present in the hypothetical scenario (1 = pro-restoration bias to 7 = anti-restoration bias). The mean of the respondents' ratings was 3.6 (SD = .97, N = 66), indicating that the scenario description was perceived to be a fairly unbiased source of information about a restoration controversy.

Nearly 80 percent of the respondents said they were unaware of the controversy surrounding ecosystem restoration in the Chicago area before completing the questionnaire. This seems somewhat surprising given the media coverage of the controversy. However, 49 percent of the respondents reported visiting restoration sites, and 6 percent reported having participated in restoration activities. Only 3 percent were members of environmental organizations. As a whole, these results indicate that the respondents were moderately aware of restoration activities but not the controversy, and that they appeared to have no overwhelming interest in environmental issues in general.

Decisions and Emotions

Respondents were given a page on which to write their solution to the hypothetical environmental restoration controversy, but most of their solutions averaged a paragraph or two in length. The sample excerpts below capture the diversity of participants' responses:

> There is no reason to keep the prairie. It is a terrible environment. Trying to recultivate it is a waste of money. And to take forest preserves and parks for this purpose is taking away the only cultivated beauty in the state of Illinois.

> Stop the restoration efforts permanently and immediately. From what I have seen, these so-called restoration efforts are criminal.

> The removal of mature trees and shrubs have been harmful to wildlife, not helpful.
>
> When at all possible mature trees should be left alone. "Thorny-bush," however, would probably be okay to remove. . . . While native prairie might be ecologically pure, times have changed—like it or not. Europeans have arrived and become well-settled. A restoration area is a nice addition to a community but it shouldn't be allowed to expand beyond a reasonable limit. Many others would view a landscaped park setting as preferable to a prairie.

> We should try to restore the natural environment but we have to look at the implications. We should avoid harming animals, avoid starting forest fires, avoid herbicides. But if damage needs to be repaired we need to do it but the community should be brought in and their views should be heard. More research should be done in order to avoid harming people. Remember the land belongs to the people, but people also tend to destroy nature.

> In this instance, perhaps a vote before anything was begun should have been considered. Since that is not the case and there are viable arguments both for and against restoration, I believe a moratorium should be set up to determine next steps. As an individual I would vote to save and restore the habitat to its natural beginnings; as a member of a democratic community, the people must ultimately collectively speak for common areas.

> I agree with [alternative solution] #4—expanding the restoration efforts to encourage further recovery of savannas and prairie environments. I strongly believe [in] this alternative because every day we use cars, sending carbon monoxide to the air, polluting it more and more every day. And now nature needs help and it can't possibly survive without our help, so you have to do something to save it!

We classified the written decisions using the set of five solution options that appeared at the end of the scenario. The results of this analysis, presented in Table 7.3, further demonstrate the wide range of participants' suggested solutions to the hypothetical problem. About a third of the respondents favored a moratorium on restoration activities while further study was done, which was a strategy employed in the actual Chicago controversy. Only one in ten respondents felt that restoration efforts should be halted, and 21 percent thought that restoration should be continued.

After writing down their decisions, respondents indicated which of several

Table 7.3. Solutions to a Hypothetical Restoration Controversy Offered by Participants

Proposed Solution	*Percentage*[1]
Place a moratorium on restoration until a thorough study of the issues can be conducted	35
Continue restoration efforts as currently conducted	21
Other compromise solutions, not yet identified	15
Stop restoration efforts permanently	12
Expand restoration efforts to encourage further recovery	2
Other	15

[1] $N = 66$

emotions they experienced while reading the scenario and deciding what should be done about the controversy. The frequencies of reported emotions are presented in Table 7.4. The active negative emotions of anger and disgust were reported with relatively less frequency than the passive negative emotions of sadness and fear. A fifth of the respondents reported being happy during the consideration and decision-making process.

The proportion of respondents who stated that they experienced various emotions seems somewhat high given the fact that they were considering a hypothetical rather than a real restoration scenario. Additionally, the balance of passive and active negative emotions indicates that emotions such as anger and disgust that usually drive controversies were relatively less important in the response to this problem. In real situations, however, it takes only a small number of concerned and emotional citizens to generate a controversy. Nonetheless, these results from our scenario indicate that a significant proportion of the broader public may experience negative emotions while considering an ecosystem restoration problem.

Previous studies (e.g., Vining 1987, 1992a; Vining and Schroeder 1987) have shown that negative emotions are often associated with decisions to preserve the environment. We tested this relationship in our present study by

Table 7.4. Frequencies of Self-Reported Emotion Evoked by the Hypothetical Controversy

Emotion	*Percentage*[1]
Sadness	24
Happiness	20
Disgust	15
Fear	14
Anger	6

[1] $N = 66$

cross-tabulating respondent data on emotions with the categories used to classify their decisions regarding the hypothetical controversy. These analyses indicated that there were no systematic relationships between any of the emotions and decision categories. Since there was demonstrably a great deal of emotion involved in the actual Chicago controversy, these results indicate a need for further examination of the relationship between environmental restoration activities and emotional responses of the public.

Opinions about Human Intervention in Ecosystems

In another question, respondents were asked to indicate the importance of a variety of reasons that humans might intervene in nature. These reasons and their mean importance ratings are listed in Table 7.5.

Two reasons for intervening in nature—to produce material goods and to reap private economic gain—rated as lowest in importance, while human health and ecosystem health were rated as the most important reasons. The relatively low importance given to economic and material gains may reflect a social desirability bias among respondents, in that personal gain is not generally considered to be a socially acceptable reason for exploiting anything (or anyone). These attitudes may not be consistent with behavior, however, as many individuals espouse environmental conservation ethics while engaging in behavior that is inconsistent with those values (e.g., Ebreo et al. 1999). Also, these questions did not require realistic trade-offs between the protection of nature and economic welfare. If preservation of old-growth forests, for example, required personal sacrifices of building materials, it might not be so easy to dismiss economic or material gain.

It is noteworthy that promoting ecological health was placed ahead of most of the other reasons for intervening in nature, including preserving

Table 7.5. Importance of Reasons for Human Intervention in Ecosystems

Reason to Intervene/Restore	*Mean Rating*[1]	*Std. Dev.*
To provide for improved human health	3.4	0.8
To improve an area's ecological health	3.2	0.9
To provide food for humans	3.1	0.8
To improve the appearance or beauty of an area	2.6	1.1
For national security	2.6	1.0
To provide a place to live for humans	2.4	0.9
To improve recreation	2.3	0.8
To provide material goods	2.1	0.9
For private economic reasons	1.6	0.8

[1] $N = 72$; Rating scale: 1 = weak reason, 4 = strong reason

national security and providing homes for humans. This finding appears to coincide with the reasons restorationists themselves often give for why they engage in restoration—that is, "to help the environment" and "to protect nature" (see chapters by Schroeder and by Grese et al. in this volume).

While participants' emphasis on intervening in nature to provide human health benefits seems at odds with their emphasis on protecting nature from human activities, these joint health concerns are entirely consistent with the messages many environmental organizations are using to urge the protection of natural areas. There is widespread interest, for example, in protecting rain forests and other natural areas in order to search for plants and animals that could provide medications for humans. The endorsement of ecosystem health as a reason for intervening in nature may provide a useful communication strategy for future restoration projects. Although the improvement of ecosystem health was probably the single most important reason the Chicago-area restorations were conducted, this may not have been communicated to the public clearly enough or early enough.

Opinions about Restoration Practices and Policies

Respondents were asked to indicate the extent to which they agreed or disagreed with a series of seventeen opinion items about restoration practices and policies. These items and the mean ratings for them (1 = disagree strongly to 5 = agree strongly) are presented in Table 7.6 in descending order of agreement.

Respondents strongly endorsed items indicating that local residents should be fully informed and involved before restoration efforts are begun. Conversely, they disagreed with the statement that restoration should be done despite opposition. These findings are fully consistent with the literature on public involvement and democratic theory, and with the experiences of many land managers over the past 40 years (Knopp and Caldbeck 1990, Mohai 1995). From the clearcutting controversies of 1960s and 1970s to the present day, land managers and members of the public have repeatedly clashed over the proper use and management of public lands. Land management practices are undertaken by professionals who take pride in their training and work, and who may not believe that members of the public have appropriate expertise (Tipple and Wellman 1989; see also Helford, this volume). Members of the public, on the other hand, behave in accordance with the belief that public lands are in some sense their own and that they have a right to say what should be done on them. This conflict of values has resulted in repeated land management controversies and is at the heart of the restoration controversy in Chicago. Given the generally positive reaction toward restoration, especially when it is conducted for preservation of species diversity and ecosystem health, it is possible that the Chicago controversy might have been avoided or

Table 7.6. Participants' Opinions about Restoration Policies and Practices

Opinion Statement	*Mean Rating*[1]	*Std. Dev.*
Local residents should be fully informed before restoration efforts begin in their communities	4.5	0.6
Restoration efforts should be used to help recover plant and animal species that are rare and endangered	4.1	1.0
The public should have a say about whether and where restoration takes place	4.0	0.8
Restoration efforts should try to improve the appearance of an area	3.8	0.9
Restoration work should be done only by professionals or scientists trained in environmental management	3.7	1.2
Controlled burning to regenerate growth is acceptable, even near developed areas	3.7	0.9
I would support savanna restoration efforts in a wooded area near my home	3.4	1.1
Herbicides should never be used in restoration efforts	3.4	1.1
Restoration techniques should be used even if the ecological health of an area cannot be returned to what it was in pre-settlement times	3.4	1.1
Ecosystems are the same thing as nature	3.3	1.0
Large trees should never be removed in restoration efforts, even if they are not native to an area	3.3	1.3
Environmental restoration should be done only in cases of extreme environmental degradation	3.1	1.3
We should allow natural areas to evolve as they will without any intervention	3.1	1.3
Public funds are better spent on acquiring additional natural lands or open space than on funding restoration efforts	3.0	1.2
Restoration efforts should try to bring our natural areas back to a condition as close as possible to pre-European settlement (what it was like when the land was inhabited only by Native Americans)	3.0	1.3
Removal of nonnative or invasive species is acceptable, even if some desirable species are hurt in the process	3.0	1.2
There will always be people who oppose restoration, so it is best to do it regardless	2.8	1.3

[1] $N = 72$; Rating scale: 1 = strongly disagree, 5 = strongly agree

minimized by the implementation of a good public information and involvement program.

Respondents also endorsed the idea that improving the appearance of an area was a worthy goal of restoration projects. This finding has implications for the methods in which restoration activities are conducted. In the real controversy, opponents objected strenuously to what they considered a clearcutting of the nature preserves. Although the rapid removal of alien species and other trees may be the most efficient means to restore a savanna ecosystem, it is objectionable visually. This issue again echoes the land management controversies of the 1960s and 1970s that led NEPA to require consideration of the aesthetic consequences of land management practices. A more gradual phasing of restoration activities combined with an aggressive public involvement program may have been helpful in this respect (for more on this idea, see Ryan's chapter in this volume).

There was moderate support for the use of controlled burns in management of restored areas, but respondents also felt nearly as strongly that herbicides should never be used. Here again, a clash between the values of the public and those of the restoration advocates can be seen. In the actual controversy, restoration advocates believed that the use of herbicides, as with the cutting of trees, was an important means to a worthy end. Conversely, while supporting the general notion of ecosystem restoration, members of the public appeared to be more likely to question the means by which this is achieved.

The credibility and credentials of the individuals or groups carrying out the restoration activities were also important to our research participants. Respondents agreed that restoration work should be done only by professionals or scientists trained in environmental management. This issue became a very important one in the real Chicago controversy, where restoration activities were carried out by Nature Conservancy volunteers working in association with Forest Preserve District officials. Volunteers carried no identification and did not wear uniforms or T-shirts identifying them as representatives of either The Nature Conservancy or the Forest Preserve District. Thus, what forest preserve visitors and neighbors saw was what appeared to be other members of the public cutting down trees and removing large quantities of brush from the forest preserves. It is not surprising that this was objectionable, and eventually volunteers were required to carry identification, wear identifying clothing, and be supervised by a uniformed representative of the Forest Preserve District. While better credentials may have eliminated important objections that opponents had about restoration, it is uncertain whether they would have prevented the controversy from happening. For additional thoughts on this topic, see Andrew Light's discussion of the certification of restorationists in the following chapter.

The acceptability of attempting to return areas to pre-European-settle-

ment conditions was assessed by two items. Respondents gave these items nearly neutral mean ratings, neither agreeing nor disagreeing that the goal of restoration should be to return areas to pre-European-settlement conditions. This reflects the difficulty of the issue of establishing and communicating ecosystem restoration goals. The pre-European-settlement criterion is problematic even for restoration advocates and ecosystem scientists—suggesting, for one thing, that Native Americans were a part of the natural ecosystem while European settlers were not. In the actual controversy, the restorations in question took place in an existing urban ecosystem. Residents were used to thinking of the forest preserves as wooded recreational areas, parts of the urban "human habitat." Residents probably did not think of these areas as prairies or savannas invaded by alien species. Thus, restoration activities, however well intended, were perceived as drastically changing the familiar and cherished urban forest.

Conclusion

Controversies result when values conflict. Respondents to our scenario of a hypothetical restoration controversy expressed a strong belief in public involvement, reflecting one of the principal issues raised by restoration opponents and acknowledged in retrospect by restorationists and land managers in the real Chicago restoration controversy. In this way, the Chicago restoration controversy is reminiscent of the clearcutting controversies over national forests (Dana and Fairfax 1980). In both cases, environmental changes were made in line with decision-making processes and criteria that were neither communicated to members of the public nor agreed upon by them. In today's society, failure to involve the public in decisions regarding management of public lands is generally regarded as unacceptable. The negative consequences of closed-door decision making have been played out enough times over the past thirty years that public involvement is now a mandate for virtually every American land management agency. There is also growing recognition that public involvement not only helps to prevent (or at least lessen) controversies, but also can improve the decision-making process (Creighton 1981, 1983, Gericke et al. 1992).

Our results indicated that nearly 80 percent of respondents were not familiar with the controversies raging over the Chicago restoration activities. However, respondents did report significant amounts of negative emotions after reading and deliberating over a hypothetical restoration scenario based on the actual Chicago situation. It is reasonable to speculate that many members of the public would be upset about the restoration activities had they witnessed unidentified volunteers removing trees and large amounts of brush from forested areas. Emotion, especially negative emotion, is a strong motivator, and

it is plausible to expect that any individual witnessing the restoration activities without prior notice or understanding of what was going on would be upset enough to take action. This is exactly what did happen with neighbors and visitors who knew of the activities, and the scale of the controversy likely could have been much greater had more individuals witnessed the brush and tree removal.

Previous studies have shown that negative emotions are often associated with preservation decisions (Vining 1987, 1992a, Vining and Schroeder 1987). In the present study, the issue of preservation is very complex. Nature preserves can be viewed as areas that are both natural and unnatural. They are invaded by human-introduced species and are not good representations of the area as it was before European settlers arrived. At the same time, these areas represent precious islands of nature in an environment dominated by human constructions. It will continue to be a challenge for environmental managers, activists, and researchers to understand this relationship.

A solid majority of our respondents advocated compromise solutions to the hypothetical restoration scenario. Moreover, there was considerable explicit support for judiciously proceeding in conducting restorations and resolving restoration controversies, as well as enthusiasm for the concept of restoration in general. These moderate responses seem at odds with the highly polarized and contentious debate that has taken place in Chicago. Again, we emphasize the importance of public involvement in resolving controversies before they begin. If county and Nature Conservancy officials had, at a minimum, conducted a social impact assessment, they would probably have discovered that there was cautious support for restoration as a concept and for restoration actions on the ground. These sorts of data can not only inform the process by which restoration should occur, but also provide a measure of the broad base of support among county residents for the restoration activities. There is almost always tension between the interests of local residents and members of the broader public, and good public involvement techniques are instrumental in identifying and resolving these value conflicts.

We did not assess the values of restoration volunteers directly. However, it is clear from several of the other chapters in this volume that the volunteers valued doing restoration work so highly that broad-based public involvement may have been a secondary concern at best, deemphasized altogether if it involved political decisions about whether, how much, and where restoration should take place. Restoration activists are fond of referring to themselves as members of grassroots movements (Stevens 1995), and thus may have assumed that their values did represent those of the public. Schroeder (this volume) and Grese et al. (this volume) found that volunteers on restoration projects took great pride in their work and accrued other psychological benefits as well. It is worth considering the idea that greater involvement of members of the pub-

lic in restoration plans and activities might have given others a sense of pride and accomplishment as well.

The results of this study suggest that ecological restoration specialists, public land managers, decision makers, and social scientists interested in human-environment interactions have a lot to learn from average citizens. Survey respondents strongly identified the need to inform and involve the public in restoration activities, to frame compromise solutions, and to proceed judiciously. At the same time, the global issues of both human and nonhuman health and survival clearly emerged. In many ways the Chicago restoration controversy is a microcosm that reflects our broader concerns about the character of human habitats and our place in the natural order.

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