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In This Issue

Chicago WILDERNESS

The Role of Volunteers in Conservation

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Volunteers play a key role in conservation and restoration work throughout the Chicago Wilderness region. What motivates them to volunteer for these activities? What keeps them coming back? Kent Fuller shares his own experiences and insights into the motivations of other restoration volunteers.

Why do volunteers do it? Why do people like me volunteer? What do we get from it?

Volunteerism is a huge and often invisible engine that keeps American communities and organizations going. Groups of unpaid people have always gathered for various purposes including defense, fire protection, religion or mutual aid. Volunteers really are what sustain communities. I have long been involved in various community affairs, and for the last ten years, in ecological restoration. Now that I am retired, most of my time and energy goes into ecological restoration, and I sometimes wonder, "Why do I do this?"

Volunteer Motivations

My own motivations for volunteering for restoration work have varied tremendously over time. At one point, I was vigorously sawing buckthorn when I wanted to be sawing my boss' neck, enjoying the release of hard physical work in contrast to my desk job. I felt delight in restoring beauty and working with new friends. Early in my experience I told somebody that I actually *needed* to be doing this kind of work. What did I mean? I thought that it might be worthwhile to review what I know from my own experiences and what I have learned by observing others.

Mostly, we do what makes us feel good. Why? Although it can take some odd turns when we do things to satisfy subliminal instincts or feelings of obligation, we often do them because they satisfy readily apparent needs.

I believe the reasons are as varied as are the volunteers. In my case, I grew up with religious motivations as complex as Garrison Keillor's, but looking back, most of my motivations are secular. Below, in no particular order, I list reasons why I think people volunteer. How does my list compare with yours?

My preliminary analysis suggests three categories of motives. It seems to me that there are attraction factors, which are positive aspects of the work that we find appealing; there are avoidance factors, where we are getting away from one thing by starting something new; and there are belief factors that motivate us to do things whether they bring pleasure or pain. I can check off virtually all of the following as being a factor at some point in my experience.

Attraction factors:
- Enjoying the outdoors
- Observing nature
- Learning about nature from others
- Helping nature and biodiversity
- Working with others for a good purpose or common cause
- Working alone for a worthy cause
- Meeting others with similar interests
- Enjoying physical work
- Seeing recovery of beauty
- Seeing recovery of a diverse system
- Creating plans for recovery and seeing them come about
- Seeing the results of organizing group efforts

Avoidance factors:
- Distraction from something in our lives that we find dissatisfying: work, relationships, etc.
- Desire to get away from mentally stressful workplace situations
- Desire to get away from routine activity

Belief factors:
- Belief that it is important for humans to give back to nature, balance our own heavy ecological footprints, preserve the diversity of native species and natural communities, and help other species;
- Belief that the diversity of nature should be protected from human-caused mass extinction because it is the result of millions of years of evolution that can't be replicated;
- Belief in protecting and restoring the diversity of nature because it is God's creation and we should respect it.

Role of Volunteers and Kinds of Satisfaction

In my experience, one of the wonderful things about volunteer restoration work is that it brings together people of many different backgrounds and beliefs. Individuals range from liberal to conservative; religious to atheistic; wealthy to poor; and people with little formal education to those with PhDs, yet we rejoice in working together to accomplish a valued goal.

Satisfaction experienced by volunteers depends in large part upon their needs and motivations. As noted above, there are a wide range of needs and motivations involved, but one consistent factor is the desire to participate in something worthwhile; to have spent time doing something useful. Generally speaking, volunteers want some sort of ownership of the endeavor and/or the place in which they are working. For many of us the most satisfying link is working with our hands to restore a specific place. Performing physical work is a fundamental human activity that bonds us with the activity, with the place, and with others sharing the experience.

Our sense of place has eroded in recent times because of improved transportation and communication, and our increased ability to move our home and work places around the country and the globe. However, as humans we are deeply conditioned to identify with a place. Learning about our own local geographic place and its natural history coupled with working to save it can be profoundly satisfying.

Some volunteers prefer to focus on specific tasks, often physical work, rather than be involved in the more complex work of planning and organizing. Others accept responsibility for, and enjoy planning and organizing restoration strategies and work. Often individuals begin at the task level and progress to planning and organizing. In any case, being involved and having ownership at all levels enhances participation. Most volunteers will not long accept being treated as if they are just part of a pool of labor.

Keeping volunteers coming back requires giving them a sense of partnership and recognition that their contributions are valued. Recognition takes many forms, but it comes primarily from peers, not-for-profit groups, and host landowners. Some volunteers have been astonishingly self motivated, and have kept up their long-term work in the face of abusive behavior from a host landowner, but these are exceptions. Successful programs are best built on mutual respect and positive reinforcement from the host landowner.

Potentially, volunteers can do any work done typically by paid staff and contractors; however, there are practical limits due to legal, liability, and specialized training requirements. Also, there may be a need for paid staff to maintain core organization functions that may not appeal to volunteers, or that need to be done with great certainty on a command basis. In contrast, volunteers can easily do some things that are difficult or expensive if done by paid staff. This is especially the case with things that need to be done on a very local basis or beyond usual business hours. For example, site stewards are often willing to adopt particular areas, and devote as much time as needed to control weeds or nurture plants, far beyond the capability of centralized staffs responsible for vast areas.

In the most productive of situations, volunteers are doing important restoration work that is above and beyond the budget and workforce constraints of the host landowner. Productivity is greatest where a sense of mutual respect and partnership prevails between volunteers and the host landowner, and where volunteers are involved in developing plans as well as doing the on-the-ground work.

Finally, in addition to the work they do, volunteers also provide an informed constituency that can support host organizations, influence public opinion, and influence local governments.

Conclusions

As noted in the *Biodiversity Recovery Plan*, one measure of success for Chicago Wilderness will be the extent to which volunteers are involved in implementing the actions recommended in the Plan. Considering the size of the human population in the Chicago Wilderness area, there is potential for a vast army of volunteers. If we are to succeed in restoring and maintaining the health of our natural heritage of native species and ecological communities, thousands more volunteers are needed. Let's remind our elected officials of the opportunity, and let's tell our friends and neighbors about the huge personal benefits available. Let's share the wealth.

Comparing Costs of Conventional Versus Conservation Design

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The environmental benefits of conservation development are clear, yet cost-sensitive municipalities and developers may be reluctant to try a conservation approach. John Haugland presents a study that compares costs for conservation versus traditional development approaches.

Chicago Wilderness and many of its members advocate for alternative approaches to development that are more environmentally friendly. Alternative development approaches can be used to offset a number of threats to the environment, including fragmentation, habitat destruction, and hydrological alterations. For example, cluster development encourages the development of the site at a higher density on one portion, so that a significant portion of habitat can be set aside to provide refuge for various species.

Clustering is one of many alternative development tools that together are often referred to as *conservation*, or *low-impact development*. In addition to habitat protection, conservation development seeks to preserve and restore a range of environmental amenities. For example, conservation development seeks to manage stormwater through innovative designs that keep water on the site and minimize run-off. The conservation approach distributes the water across the landscape, thereby mimicking or restoring the historical hydrological regime. The result is a range of environmental benefits, including groundwater recharge, improved surface water hydrology, improved water quality, and habitat protection. On the other hand, conventional practices, such as engineered stormwater ponds or concrete-lined drainage swales have shown negative environmental impacts not present with conservation tools, such as increased flooding and decreased water quality.

While the environmental benefits of conservation approaches are well known, cost-sensitive municipalities and developers are often reluctant to try a conservation approach. A common concern about these alternative development approaches is the perception of increased cost. A project group, spearheaded by the Conservation Research Institute, came together to investigate this issue. Developers, local officials, policy analysts and several land-use planning firms helped to fill information gaps on the costs of conservation development.

The project set out to answer the following questions: Does conservation development, which helps solve the challenge of providing both environmental protection and development, cost more or less than more traditional approaches? Or, are the costs so much more that it is not practical for developers to consider conservation development?

Methods

To compare stormwater management costs between conservation and conventional development, this project undertook three studies: a literature review, an analysis of built-site cases, and a cost analysis of hypothetical design templates. The literature was examined for information on cost differences between conventional and conservation development practices. The built-site analysis looked at the costs of actual conservation design practices used in real world developments, and compared them to conventional cost estimates for the same sites, or in one case, to an actual conventional development that otherwise shared similar attributes The final method took hypothetical development scenarios for a typical Northern Illinois landscape, and compared total development costs between conservation and conventional scenarios, using current cost figures from the development industry.

Literature Review

The literature analysis looked at three discrete development scales: 1) regional context; 2) site context; and 3) several site-specific Best Management Practices (BMPs). At the regional level, a large body of smart-growth literature shows higher costs of conventional sprawl as compared to smart growth across watersheds and metropolitan areas. These studies generally focus on the costs of public infrastructure for roads and water, as well as municipal services.

At the site level, many reports claim that clustering provides the largest cost savings of all the conservation tools over conventional development. The literature stresses three basic cost-saving themes from clustering: minimizing the need to clear and grade, reducing stormwater conveyance, and reducing road lengths and utility distribution systems.

A number of different BMPs are discussed in the literature, although to varying degrees and quality. For this study, five BMPs were compared to their conventional alternatives:

1. landscaping with native plants versus more conventional landscaping, which typically includes extensive use of turf grass;
2. alternative site design, which concentrates on street and parking layout, widths, and alternative paving materials in order to minimize impervious surfaces, versus standard street and parking practices;
3. bio-swales, the more conservation-friendly form of stormwater conveyance, versus traditional curb, gutter and piping;
4. bio-retention versus standard detention; and
5. green or vegetative roofs versus conventional roofing.

From the analysis of BMPs, two significant lessons emerged. First, native landscaping is significantly cheaper than landscaping with turfgrass when irrigation systems are a component of the conventional form. Second, standard conveyance methods using pipes are significantly more expensive than naturalized swales for handling stormwater. This is true for both construction and maintenance. However, the literature warns that all costs are site-specific. Cost and performance depend upon many site-specific variables, including soil types, climate, surrounding land use, land and property values, regulatory requirements, other methods also in use, and others.

The literature points out that several specific conservation tools can have multiple economic effects by themselves. For example, clustering can reduce costs in many

ways: decreased impervious surface costs; lower storm drain and sewer line costs; lower grading costs; less clearing; less need for erosion control; decreased lengths of utility lines; and increased land value.

Most importantly, the literature shows that, by combining multiple tools (such as clustering with native landscaping, bio-swales, and other practices), even deeper cost savings can be achieved—even when some specific tools may cost more in isolated comparisons—because such combinations of BMPs result in lower infrastructure needs, such as roads, sewers, and utilities.

Unfortunately, the literature lacks robust and detailed evidence for maintenance and life-cycle perspectives. Rigorous life cycle analyses, both economic and ecological, can go a long way to provide information on time-dependent factors. Because low-impact development projects are often in pilot stages at this point, the full maintenance costs and life spans have not been fully examined yet.

Built-Site Cost Analysis

Built-site analyses provided case studies from the real world to complement the lessons from the literature research. By analyzing actual engineering data on construction costs, the project group compared specific aspects of development costs more closely to determine where cost-savings occur when conventional and conservation developments are compared. The group looked at six built-site case studies. Descriptions and results for five of them are summarized in Table 1 .

Table 1: Results of built site cost analysis

Name	Type of Comparison	Result Summary
Sunset Prairie (Conventional) and Mill Creek (Conservation)	*Similar size residential developments in Kane County.*	*$3,700 per lot (approximately 66 lots) saved at Mill Creek relative to Sunset Prairie. 53% of savings from stormwater methods and 21% from site preparation, such as grading.*
Bielinski Homes Developments	*Three conservation developments comparing actual costs with estimated conventional cost scenarios.*	*Site preparation saved 23-32% of development costs vs. estimated conventional scenario. Stormwater management saved 47-69%. Savings also in wastewater, water distribution, utilities and paving. Landscaping costs slightly higher.*
Prairie Crossing	*Residential and some mixed use. Comparing stormwater components within development, some conventional and some conservation.*	*Total net savings from conservation development from these construction items were estimated to be $1,375,000 ($2,028 per acre) for the overall site.*
Tellabs Corporation	*Corporate campus landscaping and stormwater management. Conventional estimates and actual conservation costs when built.*	*Total savings of site preparation from conservation development were as much as $214,500 (or $3,900 per acre) versus than the conventional scenario.*

One case study was not from the Midwest, and so is not discussed here.

Across all cases, the largest cost savings under the conservation development approach were derived from site preparation, stormwater management, and layout of streets, driveways and sidewalks. Two conservation techniques appear to have the most significant influence on cost savings: clustering design and stormwater management. By clustering and using conservation methods for stormwater management, less infrastructure is needed for sewers, streets, and utilities.

Template Cost Analysis

Various templates, or design models, were used to illustrate the cost differences between conservation and conventional designs at the scale of typical northern Illinois development parcels, using as a test site a hypothetical forty-acre parcel in the Blackberry Creek Watershed in northern Illinois. The design templates were categorized by land use and reflected the same densities for both the conservation and conventional designs within each land-use category. For each land-use type, typical costs associated with conventional design were compared to costs associated with conservation design alternatives. Table 2 shows the different development approaches for each land use category and the cost difference resulting from the analysis.

Table 2: Summary of the differences between developments and the resulting costs.

Land-Use Category	Summary of differences between the conventional and conservation design alternatives	Differences in resulting costs
Moderate Density Residential (2.2 units per acre)	*Wide roads, no public open space, stormsewers, and turf detention basins, versus narrow streets, integrated natural stormwater system, clustering and open space.*	*Overall capital cost savings from conservation were 15% of conventional.*
Rural Residential (0.55 units per acre)	*Cul-de-sac drained with traditional roadside swales and culvert into detention basin, versus narrower drives, naturalized stormwater system, trails and open space.*	*Development costs slightly less for conservation alternative.*
Estate Residential (0.2 units per acre)	*Both have same cul-de-sac pattern, lot lines, and open swale systems. In conservation alternative, areas beyond footprint preserved or restored, and shorter driveways.*	*Conservation saved 40% of conventional costs.*
Commercial/Industrial	*Auto-access strip mall with 2 single-story big box retail, isolated outlets, parking and detention, versus big box retails, but in a "main street" retail setting with plaza, permeable paving and bioswales.*	*Alternatives nearly equivalent, except for a "premium" conservation alternative, which added a green roof, thereby increasing costs over conventional.*

A majority of the conservation template designs are seen as cost competitive or more economical with the exception of the 'Premium' Commercial/Industrial Template. Looking across the residential categories, the cost savings from conservation methods increase as the density of the development decreases. Stormwater management infrastructure costs for the conservation design templates are consistently more economical, ranging from a 10- to 80 percent reduction.

Discussion and Recommendations

Looking across all three analyses (the literature review, the built-sites analysis, and the template analysis), the results contradict the notion that conservation design is always more expensive than conventional practices. The analyses not only show that conservation designs are cost-competitive, but also illustrate many situations where conservation methods can save the developer significant percentages. For example, all three analyses show that, by clustering housing and commercial development on a portion of the site, the lengths, and therefore costs, of roadways and infrastructure will be reduced.

Given the wide variety of conservation approaches that can be used in isolation or combination, the analyses reveal that there is a continuum of choices; in other words conservation design is not all or nothing. A spectrum of approaches and mixes of conservation tools can be considered for every budget and every site. Premium tools, such as porous pavements and green roofs, may be appropriate to consider for specific sites, conditions, and owners, but are not necessarily appropriate for every development.

While this study gathered evidence of the cost competitiveness of conservation developments, further research work is needed on several fronts to:

- gather and analyze information on operation and maintenance costs, where possible, using life-cycle analyses to compare methods;
- account systematically for both cost and effectiveness in future analyses of conservation design alternatives;
- analyze low-impact development costs in a higher-density context where tools such as porous pavement and green roofs may be more competitive;
- conduct more economic benefit studies that can provide information on the values obtained by conservation development, as guidance for planning efforts; and
- analyze cost differences in landscaping methods more closely to see that the numbers are consistent.

Even where conservation costs are competitive, incentives should be considered for two reasons: 1) to help communities and developers overcome market inertia, even when they have supporting information for change; and 2) to enable financing mechanisms that pilot innovative approaches in new locations.

The project team recommends outreach and dialog with municipalities and developers. Use of the Internet could provide this cost information and new reports as they become available in the form of a clearinghouse for costs and benefits. Such a website could include a relational database that helps users tailor the information to their needs. Links to this website could be on the websites of professional organizations, such as the International City / County Managers Association, the American Society of Landscape Architects and the American Institute of Architects.

John Haugland works for the US Environmental Protection Agency. This article summarizes the main findings of this project; however, complete details will be available later this year, when the project team unveils their report, "Changing Cost Perceptions: An Analysis of Conservation Development."

For a copy of the final report, contact John Haugland, haugland.john@epa.gov.

ADID (Advanced Identification) Studies: A Wetland Protection Tool

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Advanced Identification of Aquatic Resources (ADID) studies inventory, evaluate, and map high quality wetland and stream resources in a given geographic area. Jeffery Mengler presents methodology and results for two recent ADID studies.

Abstract
Advanced Identification of Aquatic Resources (ADID) studies are a cooperative effort between federal, state, and local agencies to inventory, evaluate, and map high quality wetland and stream resources in a given geographic area, usually done by county in the Chicago Wilderness region . ADID studies have been completed in the Chicago region for Kane County (2004), McHenry County (1998), Lake County (1992) and a portion of northwest Indiana. In each county, an interagency Technical Advisory Committee (TAC) developed the evaluation approach that refined a broad list of wetland functions to two functional categories: 1) habitat value and, 2) water quality / stormwater storage value. These two categories were evaluated using a successional process of GIS screening tools, aerial photograph review, and field inspection. This enabled a relatively quick evaluation of wetland resources on a countywide scale. The primary purpose of the evaluation is to identify the highest quality remaining wetlands and streams that are considered "unsuitable for dredging and filling." In the regulatory arena, this simply means that advance notice is given that these wetlands will receive special attention during any permit reviews. This information can also be used by federal, state and local governments to aid in zoning, permitting and land acquisition decisions. In addition, these studies can provide information to agencies, landowners, and private citizens interested in restoration or acquisition of wetland sites.

Introduction and Background
Advanced Identification of Aquatic Resources (ADID) studies are a cooperative effort between federal, state, and local agencies to inventory, evaluate, and map high quality wetland and stream resources in a given geographic area, and are usually done by county, in the Chicago Wilderness region. ADID studies are part of a U.S. Environmental Protection Agency program to provide improved awareness of the locations, functions and values of wetlands and other waters of the United States. The primary purpose is to identify wetlands and streams unsuitable for dredging and filling because they are of particularly high quality. This information can be used by federal, state and local governments to aid in zoning, permitting and land acquisition decisions. In addition, these studies can

provide information to agencies, landowners, and private citizens interested in restoration or acquisition of aquatic sites.

ADID studies have been completed in the Chicago region for Kane County (2004), McHenry County (1998), Lake County (1992) and a portion of northwest Indiana. The Lake, Kane, and McHenry County studies each built upon the methods used and lessons learned in previous studies. This paper will focus on the methods and results from the McHenry and Kane County studies.

In each county, the purpose of the ADID study can be summarized as follows:
1) provide a functional sketch of the county's wetlands and other aquatic resources;
2) identify the highest quality lakes, streams, and wetlands;
3) provide information that increases the predictability of the regulatory process; and
4) provide a local planning and land-use tool.

To improve the understanding and ultimately the protection of remaining wetland and stream resources, wetland functions of particular concern were identified and prioritized in each county by a Planning and Policy Committee (PPC). An interagency Technical Advisory Committee (TAC) developed the evaluation approach that refined the list of wetland functions to two categories: 1) habitat value and, 2) water quality / stormwater storage value. The approach included an assessment of the *opportunity* of a wetland to perform a specified function as well as its expected *effectiveness* in performing the function.

Methods

The methods are presented very briefly here, but are almost as important as the results. These methods can be adapted for use in other areas needing a quick assessment of the wetlands of a given geographic area. Streams were also assessed using the Index of Biotic Integrity as standardized for streams in Illinois based primarily on existing fish data (Karr 1981; Karr et al. 1986; IEPA 1989). Lakes were assessed only in McHenry County, specifically as lakes ecosystems.

Developing the Inventory / Base Map

An early challenge in each ADID study project was the development of an accurate database of wetlands in the appropriate county. Information from two different wetland inventories was used in the development of the ADID wetland database: the National Wetland Inventory (NWI) developed by the U.S. Fish and Wildlife Service with the assistance of the Illinois Department of Natural Resources in the early 1980s and the Natural Resources Conservation Service (NRCS) Wetland Inventory. It was necessary to use both of these inventories for development of an accurate database; neither would be adequate if used alone. The NWI is becoming dated, particularly considering the substantial urban development activity in the county since the early 1980s. The principal purpose of the NRCS inventory is to identify wetlands in agricultural areas and, therefore, it is not complete in urbanized areas.

As a consequence, in Kane County the ADID project team decided to create a base wetland inventory of its own by using black and white digital aerial photography from 1996-1998 and digital soil maps for Kane County created by the NRCS and stored in their Soil Survey Geographic Database or SSURGO. The ADID wetland inventory was created by overlaying hydric soils on the aerial photography. Areas of hydric soil that did not appear to be developed or urbanized on the aerial photography were captured as wetlands using Geographic Information Systems (GIS) technology.

Habitat Value—Wetlands

As identified in the Chicago Wilderness Biodiversity Recovery Plan, wetlands provide habitat for a variety of plants and animals. Some species of wildlife are completely dependent on wetlands for food, resting areas, breeding sites, molting grounds, and other life requisites. Other animal species use wetlands for only part of their life cycle. Because so many of our wetlands have been lost, a large number of endangered species are dependent on those that remain. These highest-habitat-value wetlands cannot be adequately replaced through compensatory mitigation with current technology and processes. Other wetlands, while providing some functions, are not considered irreplaceable, though their functions remain important.

The development of the methodology for identifying the high-habitat-value wetlands relied both on existing wetland evaluation methods and the technical expertise of the members of the TAC. The evaluations in Kane and McHenry Counties utilized other documented evaluation techniques (Adamus et al. 1987; U.S. Army Corps of Engineers 1988; Roth et al. 1993) and the Illinois Natural Areas Inventory (INAI) (White 1978). Initially, all wetlands identified in the base inventory that were over a size threshold (1 acre Kane, 2 acres McHenry) were evaluated using aerial photographs and other information available as GIS data layers for Kane County. It is important to understand that the methodology was designed to screen and evaluate a large number of wetlands (nearly 3500 in Kane County). The aerial photograph evaluation of all wetlands above the size threshold produced a score for each wetland polygon. These scoring criteria were very similar in Lake, McHenry, and Kane Counties, but with local adaptations. The criteria represent ecological features which have significant influence on either plant communities or wildlife habitat quality and could be readily evaluated from available aerial photographs. For each criterion a score was assigned ranging from 1 to 4, with 1 being the lowest score and 4 being the highest.

After the aerial photograph scoring of wetland polygons greater than 1or 2 acres in size was completed, the distribution of total polygon scores was examined. The score for wetland size and two interspersion scores (based on Golet 1976; U.S. Army Corps of Engineers 1988) were then weighted by a factor of 2 to emphasize their importance. During the aerial photograph screening process, it became clear, based upon our collective experience, that these metrics were most indicative of, and correlated with true high-habitat-value sites (for known sites). A graph of these weighted scores produced a normal distribution with a break between those sites with a score of <25 and those with a score of ≥ 25. Field testing revealed this to be meaningful in terms of wetland function and quality.

All wetlands above this scoring threshold from the aerial photograph evaluations were field evaluated following the INAI (White 1978) general methods for conducting community evaluation without supporting quantitative sampling. Any wetlands that contained Grade A, B, or C wetland plant communities, or high quality wildlife habitat, or threatened or endangered species were given high-habitat-value ADID status. All sites were field evaluated by teams of two or more people between May and October. A designated team leader experienced with INAI methods and plant identification was a member of each team. Team leaders for each county inspected wetlands together at the beginning for initial "calibration" of evaluation ratings. Community types or names were adapted for each county, and loosely followed the Chicago Wilderness community classification system, rather than those used in the INAI.

Water Quality / Stormwater Storage Value

Wetlands are widely known to provide valuable water quality mitigation functions that protect adjacent or downstream water bodies. Based on a review of several references (Adamus et al. 1987; U.S. Army Corps of Engineers 1988; Roth et al. 1993), several water quality mitigation functions were considered to be important in the region. These functions include the ability of wetlands to provide for shoreline and streambank stabilization, sediment and toxicant retention, and nutrient removal and transformation.

Other water quality mitigation functions of wetlands, such as the protection of groundwater recharge areas, were considered for evaluation. However, it was concluded that these evaluations generally would require detailed site-specific data, beyond the capabilities of this ADID project.

The evaluation and quantification of the selected functions in individual wetlands can be very complex, and the referenced methodologies describe fairly elaborate approaches to perform thorough evaluations. However, because of the large number of wetlands to be considered, it was necessary to adopt a simpler evaluation procedure. The approach for these ADID studies incorporated GIS screening; aerial photo / map evaluation; and field evaluation, as needed. In Kane County, wetlands that met preliminary criteria for high value for stabilization function were field checked because it was not possible to effectively assess the presence or absence of stabilizing vegetation and stable conditions using aerial photography and / or 2-foot topographical map layers. In McHenry County, all wetlands that were determined from aerial photographs to meet preliminary criteria for performing high value stormwater / water quality functions were field checked to verify conditions.

This analysis of water quality and stormwater functions resulted in two conditions, which were considered to indicate wetlands of high functional value.

Condition 1: Three Out of Four Significant Functions Met

Wetlands that have both significant water quality and stormwater functions are generally of greater value than wetlands that have only one significant function. Further, replacement of multiple functions is generally more difficult than replacement of an individual function. For example, stormwater storage value is principally related to the size and outlet characteristics of the wetland, whereas effective nutrient removal also requires the presence of appropriate wetland soils and vegetation. Based on these considerations, a wetland was considered to have high functional value if it met the "significant value" criteria for three of a possible four water quality and stormwater storage functions.

Condition 2: High Value for a Single Function

If it can be shown that any one function is critical due to a wetland's size or its location in the landscape with respect to downstream or adjacent resources, this wetland should be considered to have high functional value. A wetland's place in the landscape or a watershed is often critical to establishing its value in providing certain functions. For example, stormwater storage and flow dissipation functions are critical to prevent hydrologic destabilization and erosion in downstream channels. If a wetland that provides this function is destroyed and replaced at some other location (even in the same watershed), these benefits may be substantially reduced or lost, and the local resource will be impaired.

Results

For the Kane and McHenry County ADID studies, wetlands and other aquatic resources were placed into one of the three following categories:

1) High-Habitat-Value Wetlands and High Quality Streams/Lakes: Wetlands and streams (and lakes in McHenry) were identified as having high quality wildlife habitat, high floristic quality, or high-quality aquatic habitat. These high-habitat-value wetland sites and high quality stream sites are considered "unmitigatable" because the complex biological systems and functions that they support cannot be successfully recreated within a reasonable time frame using existing mitigation methods.

2) High-Functional-Value Wetlands: These are wetlands that were identified as providing very important water quality and stormwater storage benefits to each county. These are wetlands whose functions were evaluated and which met the criteria of "significant functional value" for 3 of 4 of the measured functions or which provided a high value for a single function as outlined in condition 2 above. These wetland functions are considered more "replaceable" with restorations and best management practices than high-habitat-value wetlands; however, it is very important to maintain those functions at that place in the watershed. These wetlands are often upstream from, and protective of other high-habitat-value resources.

3) Other Wetlands and Streams: This includes all wetlands not placed into one of the two categories above. Wetlands in this category either did not meet the criteria for high-habitat or high-functional value, or were smaller wetlands that were not thoroughly evaluated due to project resource constraints. Certain wetlands that were not evaluated because of their small size may perform very important functions. This category also includes streams for which no information about quality existed at the time of this study, and streams which could not be evaluated because no methodology for their evaluation existed at the time of this study. This latter group includes all headwater streams.

For Kane County, 1584 wetlands were evaluated using aerial photos, and approximately 360 wetlands scored high enough for field evaluation. During field work in Kane County it was determined that 139 wetlands totaling 5,789 acres met the criteria for high habitat value. Thus, high-habitat-value wetlands comprise approximately 1.7% of the 334,080 acres that make up the entire area of Kane County, and approximately 21% of the county's 27,368 acres of wetland area. Most of the high-habitat-value wetlands tended to be fairly large parcels, averaging 42 acres in size in comparison to the average wetland size of 11 acres. Approximately one third of the 5,789 acres of wetlands with high habitat value are within Kane County Forest Preserve or INAI site boundaries. Of the 408.8 stream miles in Kane County, which includes portions of the Fox River, 53.3 miles, or 13%, were designated high quality based on available fish data.

Similarly, in McHenry County, 154 wetlands totaling 17,489 acres met the criteria for high habitat value which represented about 53% of the remaining wetland acreage in the county. Fifteen lakes were studied in McHenry County, and 7 of those were determined to be high habitat value, as lake ecosystems. A total of 572 miles of stream were evaluated and 170 miles (nearly 30%) were designated high quality.

For Kane and McHenry Counties, these results were published as interactive maps with associated database information on compact disks. In Lake County, paper maps were published. In all cases a written report provided greater detail on the methodology and results. This information provides landowners, agencies, planners, and others with information on where the remaining highest quality aquatic resources are in each county. Developers are forewarned about areas not likely to receive permits to fill, hopefully making the regulatory process more predictable. The results of this study should not be construed to indicate that all wetlands evaluated will be under federal Clean Water Act jurisdiction, nor should the mapped boundaries substitute for an onsite delineation for regulatory purposes.

For the Lake, McHenry, and Kane County ADID studies (Dreher, et al. 1992; Northeastern Illinois Planning Commission et al. 1998, 2004), the Northeastern Illinois Planning Commission (NIPC) should be contacted for the full reports which further detail the methods and references. Lake County ADID paper maps can be obtained from Lake County. For McHenry and Kane County ADID study results and maps, the interactive CD's can also be obtained from NIPC. The Kane County study will also be posted to the Internet with links from the County, the Corps of Engineers, NIPC, and perhaps others.

NOTE: The ADID studies reported here were coordinated and funded by the U.S. Environmental Protection Agency, Region 5. The primary contractor who performed all GIS database building and analysis was the Northeastern Illinois Planning Commission. In each case, the local sponsor was the County.

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Biodiversity Interpretation: Going Beyond "Just the Facts Ma'am"

Michael Kirschman
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The Interpreters Task Force of CW has held several professional trainings aimed at making our interpreters the best in the nation. Michael Kirschman explores the first training that was offered and discusses the results of a survey administered to the participants.

Abstract
Interpretation and education play an enormous role in the efforts of Chicago Wilderness (CW) to preserve biodiversity and foster a regional environmental ethic. To help ensure CW interpreters possess the tools and skills necessary to deliver effective messages, the Interpreters Task Force of CW has been offering professional trainings aimed at making our interpreters the best in the nation. This article explores the first training that was offered in February 2002. It also explores the results of a survey administered to the participants, which was intended to gauge skills and knowledge gained from the workshop and to identify areas for future trainings. As a result of this survey and the momentum established by the first training, subsequent trainings were funded and offered, and a program of informal Interpreters Gatherings was developed.

Introduction
In February 2002 over 130 interpreters attended a 2-day Interpretative Skills Training Workshop, funded by a Chicago Wilderness grant. It was held at the Morton Arboretum, 30 miles west of Chicago. The goal of the workshop was to provide active CW interpreters with the foundation, skills, and techniques needed to enhance their biodiversity interpretation. It was the first workshop of its kind in the region.

Need for the workshop was clearly demonstrated at an earlier informal roundtable, where 50 regional interpreters met to discuss the challenges facing area interpreters. A common theme quickly emerged. Both new and experienced interpreters agreed that most interpreters and naturalists (including volunteers) working on the front lines have little, and in some cases no, formal education in interpretation and/or communication techniques. Recognizing this need, the group formed an interpretative task force, applied for a CW grant, and received over $19,000 to provide a 2-day training open to interpreters and educators of participating CW agencies.

The training focused on educating regional interpreters on the foundations and basic techniques of interpretation. Carl Strang, interpretive naturalist from the Willowbrook Wildlife Center, opened the workshop as "FunGus," his wildly entertaining and educational character. Tim Merriman, executive director of the National Association for Interpretation (NAI),

was the keynote speaker and touched on the fundamentals of interpretation. He explored how thematic interpretation and the use of "universals" can have the greatest impact in linking an audience to a vital message. Building on Tim's presentation, Neil Howk and Smitty Parratt of the National Park Service (NPS) introduced participants to aspects of the NPS Interpretative Development Training Program Modules. These modules covered issues such as non-verbal communication and connecting tangible resources to intangible concepts. Master Interpreter David Stokes ended the 2-day workshop with his unique and highly energetic interpretative techniques. Needless to say, the quality of the presenters, the setting of the beautiful Morton Arboretum, and the enthusiasm of over 130 area interpreters combined to make this one of the most educational, memorable, and enjoyable trainings this author has ever attended.

The Survey

To help the task force judge the success of the workshop (e.g. how much did the participants learn), and to aid with planning future workshops, a pre- and post-skills survey was created. Participants were required to complete the survey prior to the start of the program and again at the conclusion of the workshop. Designed to be quickly completed, the pre- and post survey contained 9 multiple choice or true/false questions supplied by the presenters, as well as 5 additional questions posed by task force members to help identify future training needs. As an incentive, free copies of Carl Strang's book "*Interpretative Undercurrents*" and David Stoke's music cassettes helped to insure a high return rate (106 pre- and 98 post tests returned).

What We Learned

The field of interpretation may appear straightforward and relatively simple to most people, yet in reality it requires a combination of knowledge from the biological sciences, communication, educational theory, sociology, and psychology, not to mention a bit of geology, astronomy, physics, history, political science, the performing arts, and public relations – just to name a few! It takes formal instruction, experience, creativity, trial-and-error, and mentoring for any interpreter to really "master" this profession. Hence, a tremendous need for continuing education and professional trainings exists for both new and experienced interpreters.

Interpretation is not as "cut and dried" as most people (would like to) believe. The participants of the Interpretative Skills Workshop had two days to learn the fundamentals, and in a few cases were even more confused or overwhelmed afterwards. Keep in mind the survey was designed only to help the task force identify future training needs and to discover how much information was new to the participants. It was not intended to gauge CW interpreters' abilities in the field, nor was it used as an assessment of their skills.

The 1st CW Interpretative Skills Training Workshop was a tremendous success. I personally had never witnessed such participant satisfaction. It appears that nearly everyone walked away with something they could immediately begin to use. Evaluation comments included:

> *"I have a slide show we give that I want to reexamine with reference to connecting tangibles to intangibles."*

"I need to make some changes to my programs"
"I plan to rework my presentations based on what I learned at this workshop."
"I will be restructuring a lot of programs because of what was presented."
"I will use these techniques to better communicate with donors."
"I can apply almost everything I've learned, especially how to approach an audience."

In addition to learning new skills and returning to work "re-charged," many participants went home not only enlightened, but also reassured, as illustrated by the following comments:

"Perhaps I interpret more than I thought – naturally."
"I learned that I'm competent enough to do this."
"I learned that I have a stronger foundation than I give myself credit for."
"I learned that my techniques are not some personal, crazy invention of my own!"

So what did the survey results reveal to the task force? As we imagined, the Chicago area contains an incredibly diverse, capable, and enthusiastic group of interpreters, hungry to develop and hone their skills. We learned about areas that survey participants felt needed to be explored at future trainings, such as thematic development and questioning techniques. We learned that if you build it (i.e. offer a high quality local training), they will come (in this case, 130 interpreters from 3 states). And it was strongly reinforced that everyone needs continuing education, from the new volunteer trail guide to the 20-year-veteran nature center director.

As a result of the workshop's success, the task force continues to capitalize on the momentum this training produced. Informal Interpreters Gatherings began soon after the training, with different agencies hosting _ day workshops every other month. These workshops, facilitated by local interpreters, have addressed topics identified by the survey as areas needing additional training.

In addition, the Task Force planned and offered a second follow-up workshop in August 2003, again funded through CW. This in-depth professional workshop focused solely on thematic development. The workshop featured noted professor Sam Ham, author of Environmental Interpretation: *A Practical Guide for People with Big Ideas and Small Budgets*, and Smitty Parrat of the NPS. Professional trainings such as these are helping take biodiversity interpretation in the Chicago region to the next level.

If anyone ever asks why these trainings are necessary, I point him or her to the comment of one workshop participant who said, "employers need to realize that just putting a warm body out in the front of the public is no longer enough." The Chicago region needs qualified, trained, and enthusiastic interpreters, with solid backgrounds in the fundamentals of the profession, if we are to effectively deliver our messages. As the article title suggests, as interpreters we must go "beyond the facts." We need to connect the hearts and minds of our park visitors to the inherent value of our sites. We need to forge connections through the use of "universal concepts" to bridge the gap between the tangible and intangible resources of the site. And we need to accomplish this in interesting, entertaining, and relevant ways.

The Future of Interpretation

Basically, the future looks bright for interpreters here in the Chicago Wilderness region. Interpreters Gatherings continue to stimulate and educate. If you are interest-

ed in attending the next gathering, would like to host a gathering at your location, or would like a copy of the Biodiversity Interpretation Survey, please contact Michael Pond at CW at (773) 755-5100 ext. 5016. Personally, I can't even count the number of new ideas and excellent information I have received at these meetings.

In addition, the Task Force is hard at work planning the 3rd professional workshop. The goal of this training is to produce a core group of 24 highly trained area interpreters certified as Certified Interpretative Trainers (CIT) through the National Association for Interpretation (NAI), who would then offer NAI Certified Interpretive Guide (CIG) trainings to other CW educators and interpreters. Tim Merriman and Lisa Brochu, Executive Director and Associate Director of NAI, will facilitate the grueling, 5-day training scheduled for January 10-14, 2005.

In closing, it is difficult to "quantify" the amount and quality of biodiversity interpretation occurring in the Chicago region, but this was not the goal of the training or this article. However, without a doubt, Chicago Wilderness is quickly becoming a driving force in ensuring our interpreters are the best in the nation. While we as area interpreters hone our skills and grow professionally, we must heed the words of the Senegalese poet Babr Dioum who said, "In end, we conserve only what we love. We love only what we understand and we understand only what we are taught."

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Promoting Native Landscaping: Barriers and Motivations for Chicagoland Residents

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What motivates home owners to practice natural landscaping techniques? What barriers do they face in learning and using these practices? Barbara Willard and Keith Winsten used focus groups to examine these and related issues.

Introduction

Because of the fragmented nature of wild areas in the Chicago region most preserves abut multiple residential landowners. These landowners can have significant positive or negative impacts on the quality of adjacent preserves. Consequently, there is a need for land managers to influence adjacent landowners so that they become "good neighbors." Such neighbors are generally defined as individuals who manage their property to support greater biodiversity through natural landscaping techniques including active cultivation of native plants, judicious use of chemical fertilizers, herbicides and pesticides, and land forming methods that support local hydrology. This article reports on a Chicago region study entitled *The Good Neighbor Focus Group Project*, a region-wide plan encouraging neighbors surrounding forest preserves and conservation district lands to practice native landscaping in an effort to extend natural habitats and biodiversity into residential, business and institutional areas.

The motivating factors leading to homeowners' participation in native landscaping has been a relatively understudied topic in the Chicago region. There is an increasing need for homeowners in urban environments to practice native landscaping in an effort to conserve resources, improve the health of wildlife habitats, and to increase sustainability of cities (Beck, et al., 2002, p. 163). One of the major obstacles facing those who promote native landscapes is the aesthetic preferences of many homeowners for a well-kept, traditional yard (Nassauer, 1995). Homeowners prefer landscapes that appear to be more cultivated in design, "where 'cues to care' within the front yard plantings tell other neighbors that this is an intentional, managed landscape" (Ryan, 2000 p. 221).

This article reports on what we have learned about homeowners' motivations to practice natural landscaping techniques, the barriers they face in learning and using these practices, the appeal of different types of printed literature relating to the topic, and the perceived effectiveness of different persuasive techniques for involving homeowners in natural landscaping.

Based upon data collected from homeowner focus groups, we developed a set of tips for promoting native landscaping. We then tested the "fit" of these results with homeowners who were "neutral" in regards to natural landscaping practices. Finally, we discuss the implications of this study for an environmental communication campaign encouraging forest preserve neighbors to increase native landscaping practices.

Description

We conducted ten focus groups in five counties (Cook, Lake, DuPage, McHenry, and Kane) in the Chicago region. The ten focus groups were conducted in two phases. The first phase, identified as *established gardeners* (6 groups), consisted primarily of homeowners practicing some form of native landscaping on their property. The second phase (4 groups), identified as *neutrals*, consisted of regional home-owners that do not practice natural landscaping but were not opposed to the idea. The focus groups covered topics such as motivation for doing native landscaping, resources required, barriers that impede native landscaping efforts, and persuasive efforts at encouraging neighbors to practice native landscaping.

Results

Motivations

The **first** set of focus groups identified a number of motivating factors behind the turn to native landscaping which the coders divided into four thematic groups: 1) Shaping a Personal Space (51% of comments) ; 2) Doing Good for the Environment (26% of comments); 3) Community Participation (15%) ; and 4) Practical Self Interest (6%). Each of these groups included from one to seven specific motivation codes. After focus groups with "established gardeners" had created a universe of possible motivations, we tested the appeal of these motivations with neutral landscapers. Neutral landscapers participated in a card sort where they could identify the motivations which were most salient to them by sorting cards with a subset of the derived motivations written on them. Comparative results are described in Table 1:

Table 1

Codes related to…	**Established Gardeners**	**Neutrals**
Shaping a Personal Place	51%	46%
Doing Good for the Environment	26%	26%
Community Participation	15%	12%
Practical Self Interest	6%	16%

Comparison of these findings reveals a number of similarities and differences between established natural gardeners and neutrals. Both groups highly value the possibilities of doing well for the environment and shaping a personal place (such as a garden). Our analysis of the first phase suggests that these are the dominating motivations for natural landscaping and this result was highly supported. In our focus groups with neutrals, the individual codes *representing doing good for the earth and attracting birds and butterflies to your yard* (from the Shaping a Personal Place coding group) were more popular than any other codes.

Community Participation motivations were slightly lower in popularity with the neutrals than with established gardeners, and Practical Self Interest motivations were dramatically higher. It is reasonable to assume that the appeal of being part of a

community of natural gardeners might become more obvious after actually joining the community. The differences between established gardeners rating of the Practical Self Interest code (*saves time and money*) might also be explained in terms of experience. As much as we would like natural landscaping techniques to save time and money, the reality is that these benefits do not occur for many years. Initially, natural landscaping can be both more time consuming and expensive. Experienced natural landscapers know this and are no longer motivated by this illusion. Neutrals, however, would still find this possibility intriguing. This result confirms the importance of not setting false expectations about the time and money savings related to natural gardening since this misconception is already present in many neutral gardeners' minds.

Barriers

The initial set of focus groups identified a number of barriers faced by native landscapers as they began natural gardening, which coders divided into three thematic groups: 1) Social Barriers; 2) Pioneer Barriers; and 3) Systemic Barriers. Social Barriers (representing 46% of the barrier comments) referred to focus group member responses that suggest objections raised to natural landscaping by other members of the community. Such objections often dealt with aesthetic displeasure with native landscapes and with the "pests" (such as bees, mosquitoes, and other bugs) that are often drawn to native plants. Pioneer barriers (30% of the barrier comments) identified internal barriers that make it challenging for individuals to start practicing natural landscaping. These barriers included issues such as lack of knowledge, lack of access to native plants, and the relative inability to control a natural garden. Finally, systemic barriers (24% of the barrier comments) refer to responses that described external barriers resulting from the current way we manage public and private lands, such as invasive species planted in forest preserves, or the fertilizer from a neighbor's yard washing into one's natural garden.

Using these barriers as a foundation, we used a card sort to ascertain from neutral focus group participants which barriers would most likely prohibit or deter them from native landscaping. Comparative results are described in Table 2:

Table 2

Codes Related to…	**Established Gardeners**	**Neutrals**
Social Barriers	46%	31%
Pioneer Barriers	30%	57%
Systemic Barriers	24%	11%

Comparison of these findings reveals some significant differences between the barriers for established gardeners and those contemplating getting involved with natural landscaping. The aptly named Pioneer Barriers loomed as more serious to Neutral Gardeners then to those who are already established. In fact, the two Pioneer Barriers relating to a) the time it takes native plants to mature, and b) that it is hard to master natural landscaping, were almost twice as commonly ranked by neutrals then any other barrier. Systemic Barriers, which we originally hypothesized would be a greater issue for established gardeners, in fact were more recognized by practicing native gardeners than by the neutrals.

Social barriers were less of an issue for neutrals then by the established gardeners. This is surprising since this category included barriers relating to commonly encountered perceptions that native gardens attracted pests, weren't as attractive and were hard to understand. We identified two explanations for this result

1. that times have changed, and the social barriers natural gardeners encountered in the past aren't as common; or
2. the neutrals didn't wish to be perceived as anti-natural gardeners

Printed Literature

A common strategy for environmental campaigns is to create printed literature informing residents of how they can change personal practices and consumption patterns in an effort to improve the environmental quality of their surrounding area. Research has found that printed information alone is rarely sufficient to alter behavior (Maiteny, 2002; Kollmus & Agyeman, 2002). Rather, environmental behavior change is closely related with the ability to make sense of one's experience with pro-environmental behavior and root it in one's larger sense of self worth and personal contribution (Maiteny, 2002). Therefore, we do not suggest that land managers rely solely on printed material when trying to convince neighbors to practice native landscaping. However, because of the pervasiveness of literature in environmental campaigns, we decided to test existing literature from local organizations that promotes native landscaping.

In the second phase of focus groups, we asked participants to examine eight sets of printed material. Four of the printed materials were in a 4 x 8 _ brochure format. Of these four, two were black and white and two had color photos. The remaining four printed materials were in a packet form with 8 _ x 11 paper; three were black and white and one had color photos. After examining all eight printed materials, we asked them to comment on what they liked and disliked including assessment of the layout, the graphics, and the content. The following is a summary of the comments elicited from participants.

The most commonly sited preferred graphics were color photographs of native plants, especially when they were pictures of the plants in bloom. Twenty-eight per cent of the comments about desirable elements of both the brochures and the packets related to the pictures of flowers. Residents liked the pictures because they could get a sense of how the plants might look in their yard. They favored color photographs over black and white drawings of plants.

Focus group participants were more likely to comment on the content of the printed material; 55% of all comments referred to content. The most commonly sited preferred aspects were clarity and conciseness, with 30% of remarks relating to this preference. Participants consistently mentioned that they have little time to read and appreciated material that was "short and to the point," had "clear language," and was not "too complicated." Participants also mentioned that they would like to see certain information included in the printed materials such as: cost of flowers, sources for more information such as a web site or book, how-to directions, and the identification of certain plants for specific habitats.

Persuasive Suggestions for a Native Landscaping Campaign

Based on these findings of the focus groups, we suggest the following ten tips for a Native Landscaping Campaign:

1. Promote native landscaping because it is both good for the earth and attracts desired wildlife. Don't focus on saving time or money because these benefits do not appear for many years.
2. Avoid relying solely on printed literature. While this is an effective tool to overcoming pioneer barriers, once people are interested in native landscaping it is not an effective persuasive tactic to get people interested initially.
3. There's no substitute for "face time." Target areas where private lands affect public restoration projects and pay those homeowners a visit. Share your vision for restoration and let them know how they can help.
4. Expose residents to native landscapes by highlighting attractive native plants. This can be done by having a garden walk throughout the nearby neighborhood, showcasing those homes that effectively use native landscapes. (Note: these homes provide a more traditional aesthetic, displaying "cues to caring" such as mowed borders).
5. Remove pioneer barriers relating to a lack of knowledge by providing key resources. These include offering free advice on plant choices and designs, having a native plant sale on your property and connecting novices with experienced natural gardeners.
6. Encourage residents to start small with their native landscaping endeavors. We found that homeowners can feel overwhelmed when faced with the prospect of transforming their landscape into a natural garden.
7. A number of study participants voiced their expectation that forest preserve and other conservation staff should provide expert advice for novice gardeners. Identify someone within your organization to play this key role.
8. Understand that native gardeners' have changing needs as their expertise grows. Experienced gardeners love to share their expertise with others. Work with groups like the "Wild Ones" to offer continuing education and social opportunities.
9. Trumpet your successes! Positive news coverage of attractive native gardeners combats misconceptions that lead to social barriers.
10. Be a good neighbor! Make sure that the quality of your restoration efforts matches those of private landowners who abut your property.

In summary, our research suggests that a Native Landscaping Campaign must move beyond printed literature and provide actual encounters with native plants and gardens. We found the greatest barriers to practicing native landscaping for non-native landscapers were a lack of knowledge about the specifics of practicing native landscaping and uncertainty about how to proceed. We found that the greatest motivators for non-native landscapers were doing something good for the earth and local habitats, and attracting birds, butterflies and local wildlife to their yards. For more information or to see the complete results, contact Barbara Willard at DePaul University, bwillard@depaul.edu, (773)325-2965.

Barbara Willard is an Assistant Professor of Communications at DePaul University and Keith Winsten, when conducting this work, was the Director of Education at Brookfield Zoo.

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Regional Roundtables Project: A Strategy for Promoting Sustainable Development Practices

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Ellen Shubart
Campaign for Sensible Growth

Richard Mariner and Ellen Shubart discuss the results of three stakeholder round-table discussions directed towards finding ways to promote suburban real estate develop-ment that will help protect and enhance biodiversity.

Abstract
A series of three stakeholder roundtable discussions was convened for the purpose of strengthening Chicago Wilderness's outreach to members of the development community. The objective was to find ways to promote suburban real estate development that will help protect and enhance biodiversity. The roundtables provided a way for leaders to articulate credible "development with conservation" principles intended to influence decisions by local officials, developers, engineers, and land planners. The resulting brochure, "Sustainable Development Principles for Protecting Nature in the Chicago Wilderness Region," is being disseminated and used in outreach initiatives in strategic locations.

Rationale
The Regional Roundtables Project is a component of the Chicago Wilderness project, "Accessing and Assessing Local Government Decision-Maker Needs to Enhancing Natural Resources Protection and Sustainable Watershed Planning."

The specific purpose of the Roundtables Project was to plan and carry out a series of three roundtable meetings to widen the Chicago Wilderness communications network, further assess the needs of local decision-makers, educate target audiences, and finally, stimulate decision-making on development design and construction that will provide biodiversity protection and enhancement.

The project actually exceeded its goals because of the major contributions of its participants, local officials, developers, engineers, site planners, landscape architects, members of the conservation community, and others. Benefiting from their professional advice and involvement, we were able to produce "Sustainable Development Principles for Protecting Nature in the Chicago Wilderness Region." The Principles constitute a consensus on how to undertake planning and development that will preserve and enhance biodiversity, and thereby help implement the Chicago Wilderness Biodiversity Recovery Plan.

The statement of Principles used input from a draft policy paper developed by the preceding Chicago Wilderness Conservation Policy project.

Statement of Principles
The Sustainable Development Principles are:

1. Promote infill development and redevelopment where transportation facilities and utilities already exist in order to minimize the development of open lands, such as natural areas and farmland. Encourage development that is compact and contiguous to existing community infrastructure.
2. Locate and plan new development in ways that protect natural resources and habitat and provide buffers between sensitive natural areas and intensive use areas.
3. Use the development process to enhance and restore streams, wetlands and lakes, and to enhance their potential as recreational and aesthetic amenities.
4. Preserve permanent open space as an integral part of new development to both protect critical natural areas and to provide opportunities for recreation and environmental education.
5. Recognize the value of water as a resource and manage it to protect downstream water bodies and wetlands, prevent increased flooding, preserve groundwater resources, and maintain natural hydrology.
6. Minimize changes to natural topography, soils, and vegetation to preserve land, water and soil relationships that are essential for sustaining plant and animal habitat. Where sites have been previously altered, attempt to restore natural conditions to the extent possible.
7. Establish procedures that assure the ongoing management of natural areas within developments as part of an overall strategy for achieving sustainability.
8. Design development to achieve the broader sustainability of human and natural communities, including the social and economic dimensions of sustainability.

The Principles are strongly focused on the local planning and development process. They indicate not only the "what" but also the "why" and the "how". The document identifies, via a series of checklists, key actions that can be taken to implement the Principles. These lay the groundwork for development of a more extensive checklist tool, which the roundtable participants strongly recommended.

The Sustainable Development Principles have several functions, including:
- Demonstrating that Chicago Wilderness supports sustainable development;
- Encouraging the use of development techniques that will help implement the Biodiversity Recovery Plan;
- Demonstrating consensus among respected members of the development and conservation communities;
- Providing a tool that can be used locally to encourage local officials and others to adopt sound development practices.

Process

A project Steering Committee met in January, 2003 with representation from the following organizations:

- Peggy Notebaert Nature Museum,
- the Campaign for Sensible Growth,
- the Northeastern Illinois Planning Commission,
- the City of Chicago,
- the Village of New Lenox,
- Bigelow Homes,
- Chicago Wilderness,
- Chicago Metropolis 2020,
- Metropolitan Mayors Caucus,
- the Conservation Foundation,
- Illinois Department of Natural Resources, and
- Applied Ecological Services.

The Steering Committee discussed a number of possible directions for the project and recommended a series of roundtable discussions aimed at developing sustainable development principles which demonstrate consensus from respected area leaders.

Three roundtable discussions were held in 2003 (April, June, and August). More than forty individuals participated in these discussions. All were held at the Northeastern Illinois Planning Commission and were jointly chaired by the project's co-sponsors: the Chicago Academy of Sciences / Peggy Notebaert Nature Museum (Richard Mariner) and the Campaign for Sensible Growth (Ellen Shubart). Professional facilitator Cole Campbell assisted roundtable planning and managed the roundtable discussions. Through the discussions, the group identified key subjects for a set of principles, reviewed and discussed draft and revised principles prepared by the project staff, and ended with identified strategies for implementation. Each of the roundtable meetings was planned with the assistance of staff from the Chicago Academy of Sciences, Campaign for Sensible Growth, Northeastern Illinois Planning Commission, Illinois Department of Natural Resources, and Chicago Wilderness.

During the course of the project, the Chicago Wilderness Sustainability Team was involved in the project and provided with draft materials for review and comment. The project staff developed the final Sustainable Development Principles document with editorial assistance from Chicago Wilderness staff. The draft document was distributed to roundtable participants for final review. The Illinois Department of Natural Resources provided graphic design services for the final layout. The Principles document is available through the Chicago Wilderness website: www.chicagowilderness.org / . The document is also available as an 8 _" x 11" three-fold, full-color brochure. Brochures can be obtained by contacting Richard Mariner (rmariner@msn.com) or Ellen Shubart (eshubart@metroplanning.org). The Nature Conservancy provided funding from the Grace A. Bersted Foundation for printing.

Next Steps: Applying the Sustainable Development Principles in the Region

The document was presented to and endorsed by the Chicago Wilderness Steering Committee. It was ratified by the Chicago Wilderness Executive Council March 17, 2004. A strategy for dissemination and adoption has been developed, with one objective being the adoption of the Principles by Chicago Wilderness member organiza-

tions and by the organizations participating in the roundtables, councils of governments, and organizations serving the development and planning industry.

The Sustainable Development Principles document will also be used in combination with technical assistance tools developed by Chicago Wilderness, the Northeastern Illinois Planning Commission, and the Campaign for Sensible Growth, and others. Through a new Chicago Wilderness grant, special emphasis is being given to working with associations of local governments, professional organizations related to the real estate development process, watershed planning and management organizations, and "hot spots" in the region where biodiversity resources may be threatened by rapid development. Users of the Principles document are being encouraged to plan strategically, which should result directly in more biodiversity-friendly development.

Richard Mariner works with both the Peggy Notebaert Nature Museum and the US Environmental Protection Agency. Ellen Shubart is the Campaign Manager for the Campaign for Sensible Growth. The Sustainable Development Principles are available for download at http://www.chicagowilderness.org/pubprod/index.cfm

Book Review

Nature's Metropolis: Chicago and the Great West by William Cronon

Reviewed by Michael Pond

William Cronon, New York: W.W. Norton & Co., 1991

In his book *Nature's Metropolis*, William Cronon presents Chicago and its hinterlands as an interconnected web dependent upon different aspects of nature. Writing as an environmental historian, Cronon suggests the rise of Chicago is first due to its natural environment, with the wealth of waterways, fertile prairies and nearby forests setting the stage for what Cronon calls, "second nature." Second nature, as defined by Cronon, is man's manipulation of nature, which includes development of boat travel, lumber, agriculture, livestock and later, rails, all of which contributed to Chicago's enormous growth.

The second half of *Nature's Metropolis* begins with Chicago emerging as "the great bovine city." With the improvements in meat processing and refrigeration, railroads connected the United States, East and West, leading to Chicago's role as the premier Gateway City. Merchants travel to Chicago to conduct business and shop in the city's Busy Hive. The culmination of strategic location, trade center, urban skyscrapers, sophisticated boutiques and commodity domination earned Chicago the honor of hosting the World's Columbian Exposition in 1893, an event that marked the White City's peak as the foremost gateway to the West.

The image of the West as a vast range of mountains and bison quickly fell as the railroads pushed deeper into America's frontier. The bison population was estimated by Cronon to be somewhere between twenty to forty million before their near annihilation following the Civil War. Soon after, bison gave way to second nature, America's introduction of cattle, which consumed native plant species and trampled the earth more so than bison. The livestock in the Southwest and West were the raw materials shipped to Chicago by rail and then slaughtered, packed and processed in the immense stockyards of the Bovine City. Several elements allowed Chicago to develop as the leading packing hub; first was its centralized location, and efficiency of its stockyards, second was the perfection of Cincinnati's disassembly line, used to dismember hogs, and third and perhaps most important, the introduction of ice warehouses and railcars to preserve meat.

The advent of refrigerated railcars by packers like Swift, Armour, Hammond and Morris showed how man's manipulation of first nature, water, would forever change the livestock trade by changing it to second nature, ice. In warmer months, merchants no longer had to ship live animals to Eastern butchers, but instead could slaughter, disassemble and pack their products into cars, thus reducing shipping costs, maximizing space and preserving their commodities. With this new technology, Chicago's Big Four Meatpackers were able to dominate the U.S. market by undercutting regional butchers, who sold fresh meat but could not match the low prices of preserved, dressed beef from the Union Stockyard. According to Cronon, the result was the packers' ability to "systemize the market in animal flesh-to liberate it from nature and geography (p. 259)." The meat consumer did not see the connection between how livestock raised in rural Texas made it to the urban packing facility; however, Chicago's success was built on these connections which linked rural and urban and East and West.

Nature's Metropolis is a rare book because it looks at a perceived artificial entity like Chicago and still relates it to nature. In this respect, it is impossible to distinguish man from nature and rural from urban—they are all interconnected through the same web. In addition, if we consider the meaning of the word "nature," we are merely defining what is natural with a man-made or artificial word. With this definition as a premise, one might feel more receptive to Cronon's work especially in regards to the matter-of-fact way in which he describes the slaughter of bison and the wholesale clearing of first nature. Cronon is less interested in lamenting the destruction of natural environments but rather ponders our eagerness to separate city from nature. In his Prologue, Cronon quotes landscape architect Anne Spirn to illustrate his point: 'The city is a granite garden, composed of many smaller gardens, set in a garden world…The city is part of nature (p.19).'

The Chicago we live in today is no longer a gateway city, as Cronon explains. There is no frontier and Chicago is no longer in the West. What is clear, however, is Chicago's role in shaping the rest of the United States—the linking of East and West, rural and urban, an argument Cronon makes convincingly. Though impeccably researched with a good balance of primary sources like Vest reports, bankruptcy records, company records, newspapers and periodicals, there was one glaring flaw in the second half of the book. Cronon loses his emphasis on the various forms of nature in later book chapters. Nature is not altogether neglected; but it is generally mentioned only at the end of each later chapter. The issue of nature though is largely lost in chapters 7 and 8 when the focus shifts to marketing and urban life. Nature is convincingly revisited in the epilogue when Cronon illustrates that the pastoral landscapes he remembers as a child supply the urban smokestacks with second nature. Thus, the disjointedness of rural and urban perceived by people living in cities, towns and farms are connected in a web of nature whether we realize it or not.

Michael Pond is the Education and Communication team coordinator for Chicago Wilderness. He may be reached at mpond@naturemuseum.org

Web Site Review

The Biodiversity Project
http://www.biodiversityproject.org

Reviewed by Robert Sullivan
Argonne National Laboratory

The Biodiversity Project (http://www.biodiversityproject.org) is a non-profit organization headquartered in Madison, WI that develops biodiversity communications tools and strategies. According to the "About Us" page, The Biodiversity Project's mission is to "advocate for biodiversity by designing and implementing innovative communication strategies that build and motivate a broad constituency to protect biodiversity." The Biodiversity Project's Web site supports this mission by providing a variety of resources relating to biodiversity communication/education and public opinion research. The site covers five main topic areas:

- *What Is Biodiversity* provides basic educational information about biodiversity;
- *About Us* provides information about the mission, activities, and staff of The Biodiversity Project, including public outreach and related activities;
- *Resources* provides public opinion research results, biodiversity-related ads, logos, tip sheets, and model messages for communicators;
- *Publications* offers free access to The Biodiversity Project's quarterly newsletter and several other Biodiversity Project publications for online purchase; and
- *Links* provides more than 200 hyperlinks to Web sites of biodiversity-related organizations, institutions, agencies and firms.

In addition to these major topics, the site includes information for the media (media kit and press releases), a secure section for Project partners, and miscellaneous links from the home page. The How You Can Help link from the home page leads to information about personal actions that can be taken to preserve biodiversity.

I found The Biodiversity Project's Web site to be both interesting and informative, and the resources provided will be useful to biodiversity communicators/educators. The information runs from very basic (*What Is Biodiversity*) to advanced (*Human Values and Nature's Future: Americans' Attitudes on Biological Diversity: A Cluster Analysis of Findings from a National Survey*), so there is material of use to both novices and experts. The

emphasis is on the practical, and in addition to the informative newsletter, a variety of tip sheets, model messages, ads, and other communication/education materials are posted for free downloading, with a number of practical education and communication guides offered for online purchase. I found the detailed descriptions of the materials offered to be very helpful.

The extensive links directory covers the following topics:

- News and Information Sources, Action Alerts, etc.
- The Science of Biodiversity
- Advocacy and Policy Organizations Engaged in Biodiversity Outreach (organized by issue)
- Science, Academic and Professional Organizations Engaged in Biodiversity Outreach
- Environmental Education Organizations Engaged in Biodiversity Outreach
- Zoos, Museums, Aquaria, and Botanical Gardens
- Organizations with Experience Reaching Specific Audiences
- Pathways to the Public
- Communications Consultants and Grantmakers

While random testing indicated some out-of-date links (to be expected on a large list), there are plenty of working links to a wide variety of organizations, and users are certain to find the list useful.

My only substantial criticism of the site concerns navigability and ease of use. While the appearance of the site is visually attractive, there are a number of problems with the interface. There are no menus below the top level, so it is difficult to get a sense of the structure of the site, and no easy way to move around within a particular section. The user must use the back button or search function too often for navigation, and it is not necessarily easy to figure out where things are. There are some poorly placed links, e.g., the first thing on the Resources main topic page is a link to the Publications main topic page, which is confusing. A number of pages would benefit from introductory text, and putting substantive information under the heading "About Us" runs counter to users' expectations, as does using that label for a major topic area. If these issues can be addressed in the next upgrade to the site, users will find it easier to locate the information they need.

Overall, The Biodiversity Project's Web site is an informative and engaging site, with many resources of practical value to anyone interested in biodiversity education and communication. One of the stated tasks of The Biodiversity Project is to "empower people to act by making the connection between biodiversity and people's daily lives and basic values." The wide range of practical information and materials provided on The Biodiversity Project's Web site support this objective well.

Robert Sullivan is a Program Manager in the Ecological & Geographical Sciences Section of the Environmental Assessment Division at Argonne National Laboratory. He can be reached at sullivan@anl.gov

Do you have important research or a great success story that you believe your Chicago Wilderness colleagues would find interesting and useful? These guidelines explain what we're looking for and how to submit an article.

Chicago Wilderness Journal Guidelines to Authors

About the *Chicago Wilderness Journal*

Mission of the *Chicago Wilderness Journal*:

1. Facilitate the sharing of results and lessons learned from member-initiated projects and activities, including coalition-funded projects, team activities or the work of individual member organizations that would be useful to the wider membership;
2. Through easily consumable articles discuss practical implications, interpret data, and/or make recommendations about issues within the areas of science, land management, sustainability, education, and communication in the Chicago region;
3. Foster a sense of community among Chicago Wilderness members and improve members' ability to communicate with diverse audiences.

This journal is:

- A forum for sharing important results and lessons learned through biodiversity conservation work,
- An interdisciplinary publication that features a mix of articles in each issue from the fields of science, land management, education, communication, and sustainability,
- An online journal, published three times a year, guided by an editorial board made up of Chicago Wilderness members and coalition staff.

This journal is not:

- A peer-reviewed journal,
- A forum of advocacy or political positions,
- A newsletter with event announcements,
- A means of presenting biodiversity issues to the general public.

What we're looking for in an article

Submissions will be considered from the volunteers and employees of Chicago Wilderness member organizations, and from participants in Chicago Wilderness Teams and projects. Articles should report on the results of a Chicago Wilderness project, workshop, roundtable, or the results of such work performed by an individual Chicago Wilderness member organization. While the emphasis of this publication is on Chicago Wilderness members and affiliates, submittals from outside the membership that are relevant to the Chicago Wilderness audience will also be considered. The topic should

pertain to biodiversity conservation in this region. Articles should emphasize the lessons learned and interpretation of data, rather than methodology or simply reporting of results.

Questions to answer in the article include:
- Why did you undertake the project and what did you do?
- What did you learn from the experience? What do your results tell you?
- What are the practical or applied implications of the work – both in your field and in other fields?
- Based on what you learned what do you recommend to Chicago Wilderness members?

Note that articles don't necessarily need to tell a success story; if valuable lessons were learned from an unsuccessful project, please consider submitting an article.

Target audience

The target audience for this journal is the volunteers and employees of Chicago Wilderness member organizations, and participants in Chicago Wilderness Teams and projects. To meet the needs of this broad audience, articles should:
- Emphasize practical implications,
- Be easy to read and interesting, not overly technical and full of jargon,
- Be short but refer to additional sources of information for interested readers,
- Help readers feel connected to other Chicago Wilderness members,
- Offer readers information and resources that will help them carry out their jobs.

Article format

Please submit your article as a Microsoft Word or WordPerfect file. Articles should be three to five pages in length (approximately 450 words per page if there are no pictures or graphics; 250 words per page if graphics are included). Pictures and graphics are welcome and encouraged, but the editorial staff will make final selections! Graphics files can be submitted at 72 dpi, actual size or larger. JPG files are the preferred format for graphics. The journal can accommodate sidebars, so please indicate if there are quotes or charts that you would like set out from your article.

All articles must include the following components:
- A short abstract of several sentences that will quickly capture the reader's attention,
- A description of the work you did and why you did it,
- Results and implications for Chicago Wilderness partners.

Beyond these requirements, articles may follow a variety of outlines as suggested by these examples:

Traditional scientific research format:
- Abstract
- Objectives
- Methods
- Results and Discussion
- Conclusion / Recommendations / Implications
- References

Report on outcome of a workshop:
- Abstract
- Rationale for workshop; reasons to learn more about topic
- Main points made at workshop
- Insights gained from talks and discussions
- Conclusions and final recommendations

Description of the development of educational tool or product:
- Abstract
- Rationale for project
- Brief description of final product (e.g. curriculum, model policy)
- Lessons learned from development process
- Recommendations to others attempting similar work
- Recommendations on use of product

Submission procedures

Authors can submit either an article or a query to Elizabeth McCance at emccance@chicagowilderness.org. Queries should include a thorough abstract of the intended topic. Articles and all accompanying graphic files should be submitted electronically to Elizabeth. Be sure to include the author's contact information. Submissions can also be saved on a disc and mailed to Elizabeth at 8 South Michigan Ave., Suite 900, Chicago, IL 60603.

Although articles will be accepted on an ongoing basis for consideration in all upcoming issues, a rough schedule of deadlines follows:
- For March issues: first drafts will be due the second Friday of the preceding December,
- For July issues: first drafts will be due the second Friday of the preceding April,
- For November issues: first drafts will be due the second Friday of the preceding August.

Authors are welcome to submit articles that have already been published, as long as the article contains specific implications for Chicago Wilderness, and the author observes copyright law and has obtained the appropriate permissions for reprinting. If your submission has been published elsewhere, please indicate where and when it was published so we can note this in the journal.

The journal's editorial board recommends that if possible, authors should work with their internal PR departments for assistance in translating specialized information into material that is accessible to a more general audience. In addition, members of the journal's editorial board will partner with authors to adapt the style and format of articles to be most useful to the broad Chicago Wilderness audience.

For more information, contact Elizabeth McCance at (312) 580-2138.

About the *Chicago Wilderness Journal*

The *Chicago Wilderness Journal* is published by the Chicago Region Biodiversity Council (Chicago Wilderness) on its member web (www.chicagowilderness.org/members) site three times per year, in March, July and November.

An editorial board made up of scientists, sustainability professionals and communication specialists from Chicago Wilderness member organizations guides the production of each issue in accordance with the mission of the journal and the goals of Chicago Wilderness.

Board members are:
- Kristopher Lah, U.S. Fish and Wildlife Service
- Cathy Maloney, Prairie Club
- William Peterman, Chicago State University
- Robert Sullivan, Argonne National Laboratory

Support is provided by the following Chicago Wilderness staff members:
- Catherine Bendowitz
- Irene Hogstrom
- Elizabeth McCance
- Christopher Mulvaney
- Michael Pond

Mission of the Chicago Wilderness Journal:
1. Facilitate the sharing of results and lessons learned from member-initiated projects and activities, including coalition-funded projects, team activities or the work of individual member organizations that would be useful to the wider membership;
2. Through easily consumable articles discuss practical implications, interpret data, and/or make recommendations about issues within the areas of science, land management, sustainability, education, and communication in the Chicago region;
3. Foster a sense of community among Chicago Wilderness members and improve members' ability to communicate with diverse audiences.

For information on how to submit articles or queries, please refer to the Guidelines to Authors posted on the journal's home page. For other inquiries about this publication, please contact Elizabeth McCance at emccance@chicagowilderness.org.

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