ECOBELTS: RECONNECTING AGRICULTURE AND COMMUNITIES – CASE STUDIES

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ZONE OF TENSION

Historically, landscapes graded from urban centers to scattered villages, to a diverse mosaic of farmlands and natural areas (Figure 1). This gradient allowed both a visual and physical transition while maintaining ecologic, economic, and social connections within the larger landscape. Conflicts between urban and rural residents were minimal, in part due to the limited interface between these different land uses. Today, farmland is being fragmented by low density commercial and residential development, greatly increasing the edges of contact between urbanized areas and agriculture (Figure 2). The result is an enlarged zone of potential conflict between urban and rural residents. Despite close proximity, residents of this zone generally have a completely different set of goals, lifestyles, and daily activities. Urban residents may object to agriculture's influence on the adjacent environment while agrarian neighbors can be resentful of urban intrusion into day-to-day farming activities.

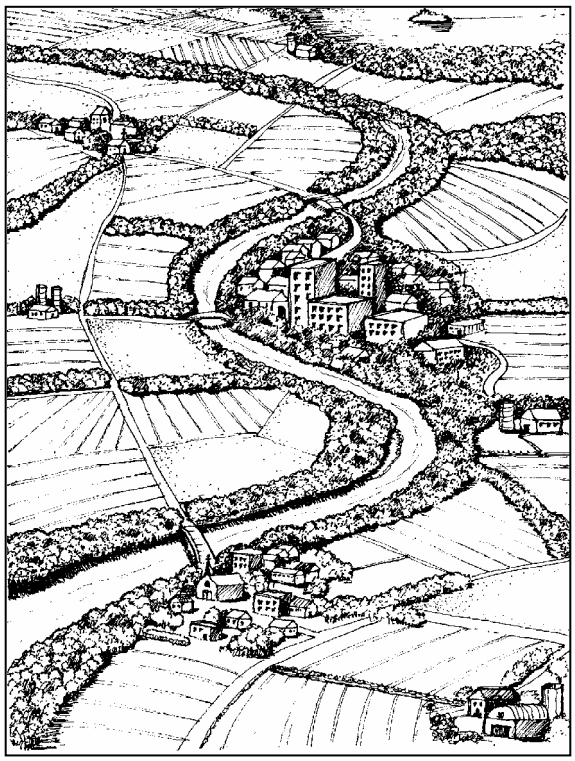

Figure 1. Historical Agricultural-Urban Patterns

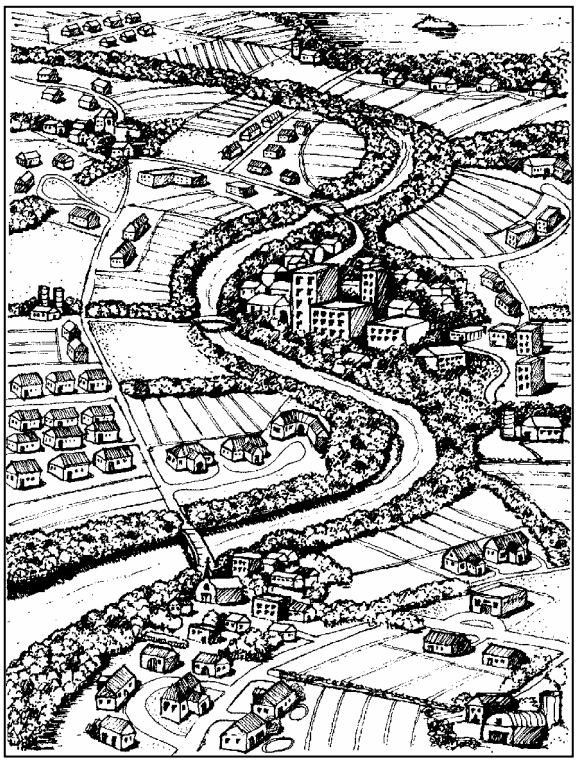

Figure 2. Current Agricultural-Urban Patterns

Bentrup, G., M.M. Schoeneberger, S. Josiah, and C. Francis. 2001. Ecobelts: reconnecting agriculture and communities - case studies. *In*: Steward W.C. and A. Lisec (eds), *Proceedings of the Ecospheres Conference*. University of Nebraska, Lincoln, NE. June 10-12.

Among the problems that may confront urban refugees include odors, dust, noise, and insects. Although a farm family may accept these discomforts as a way of life, they are often new and unacceptable nuisances to the city family next door. Across the fence, farm families see their operations hindered by the activities of these new residents, such as increased traffic and higher speeds of vehicles on roads. In addition, farmers may find themselves facing legal challenges by new exurban residents seeking to modify or eliminate adjacent agricultural operations.

The focus of most initiatives to address this "zone of tension" has been on a we-or-they approach, with proposals designed to meet the objectives of one or the other but not both. Urban objectives are often achieved through creating barriers to hide or shield agriculture's effects from adjacent urban uses. Agricultural interests are protected through such means as zoning measures and tax codes. The outcomes of these efforts are increased polarization between neighbors and generally result in "compromise" solutions that neither side may view as satisfactory. The social and ecological needs of these two sectors demand a more proactive planning approach for this interface that reestablishes the vital connections between land uses and people.

WIN-WIN SOLUTION: ECOBELTS

Vegetation-based buffers or corridors are one approach to reconnect communities and agriculture. This basic concept has been used for many centuries from the ancient hedgerows in Europe to the shelterbelts in the Great Plains during the 1900s. More recent examples include the development of linear parkways or greenways in urban communities (Smith and Hellmund 1993). Our concept builds upon this foundation of vegetation-based buffers and greenways into a more holistic system that transforms the zone of conflict into one of shared ownership and use. We define this as the concept of "ecobelts" (Figure 3) (Francis and Schoeneberger 1998). As Figure 3 suggests, carefully planned and designed ecobelts can solve a wide range of issues from education to visual quality, while creating a sense of place and community. Due to the diversity of potential issues ecobelts can address, they can take many forms such as community shelterbelts, living snow fences, riparian buffers, and revitalized railroad trails, to name a few examples. The book chapter, "Ecobelts: Reconnecting Agriculture and Communities" (Schoeneberger et al. 2001), provides a more extensive discussion on the win-win potentials of ecobelts, as well as on the issues regarding the zone of tension.

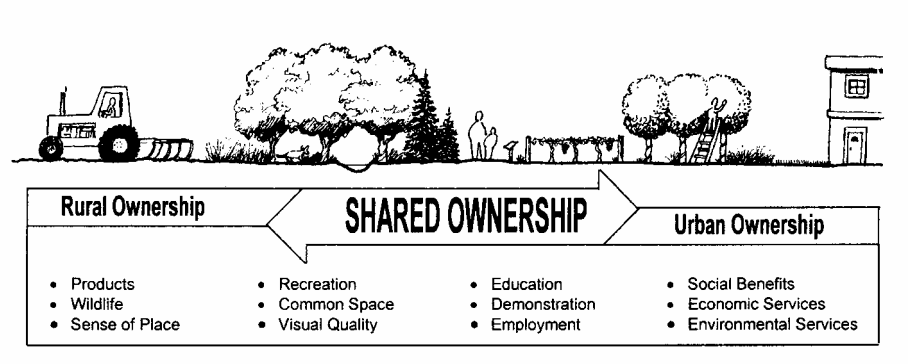

Figure 3. Potential Ecobelt Objectives

ECOBELT PRINCIPLES

There are several key principles that help us define ecobelts and illustrate how this idea expands upon current approaches to vegetative corridors and greenways.

Ecobelt Principles

- Shared Ownership
- Problems as Opportunities
- Agroforestry Products
- Landscape Linkages
- Economic, Social & Ecological Integration

Shared Ownership

A primary tenet of ecobelts is shared ownership of the ecobelt between urban and rural residents. Shared ownership is often a necessary component to build a sense of community and responsibility for planning, implementing and maintaining an ecobelt system. If the rural or urban residents do not have a stake in the ecobelt system, the potential to replace the zone of tension with a neighborhood of cooperation is greatly diminished. Shared ownership can take many forms and does not necessarily have to imply traditional deed ownership. A sense of shared ownership can be created simply through the planning and design process that carefully incorporates rural and urban concerns equally. Part of the ecobelt planning process will be educational, where stakeholders learn to view the issues from each other's viewpoint. This face-to-face dialogue allows a common definition of the issues to be created, instilling ownership in the ecobelt proposal.

Some may argue that shared ownership of ecobelts can lead to the phenomenon known as "Tragedy of the Commons" which suggests that common ownership may result in no one taking personal responsibility for the resource and thus overuse and abuse become prevalent (Hardin 1968). The key to avoiding this problem is creating a land tenure system, sometimes referred to as social fencing (Ramakrishnan 1998). This concept, which has been applied in other countries, assigns responsibility for management to a specific, well-respected group within a community. The resources are still held in common ownership, however, the designated group serves as stewards of the resources. In India, rural organizations known as Van Panchayat have been established to manage the natural resources of community forests (Agrawal 2001). These groups often hire a few chowkidars or guardians to supervise use of the forests. In addition, this approach is supplemented by a balanced system of incentives and fines to ensure sustainable use of the resources. Groups like the 4-H and scouting clubs are some of the potential organizations in the United States that could serve as ecobelt stewards.

Problems as Opportunities

The urban-rural interface zone and associated issues are often viewed as problems rather than as opportunities to create amenities for the community. For instance, dust originating from agricultural fields is considered a negative issue for nearby homeowners trying to keep their houses clean. However, it can be seen as an opportunity to mobilize residents into creating an ecobelt that can filter dust while also providing other environmental, social, and economic services. By reformulating the problem into a positive framework, residents can use the issue to bring resources together to benefit the larger community.

Agroforestry Products

Agroforestry is the combination of agriculture and forestry technologies to create integrated, diverse, and productive land use systems (Garrett et al. 2000). An example of an agroforestry system is a riparian buffer planting

that can attenuate flooding effects and protect water quality, while providing wildlife habitat and harvestable products like edible berries and medicinal herbs. Through careful management, products can be harvested sustainably from agroforestry systems, including edible foods like berries and nuts, medicinal products like ginseng and ginkgo, and horticultural materials like evergreens for floral wreaths or Christmas trees or colorful woody stems for the floral industry. The integration of ecobelts and agroforestry systems can be a perfect combination to reconnect agriculture and communities. In addition to providing inexpensive and tangible goods for residents, the process of managing an agroforestry system can foster a sense of community (Corbett and Corbett 2000). For instance, annual harvest parties can bring urban and rural residents together for a common purpose and goal. Typically, agroforestry is usually not an objective in greenway planning, possibly due to the lack of knowledge about agroforestry options. Although not all ecobelts will incorporate the harvest of agroforestry products, it is an important feature to consider in the design of the ecobelt system for most of the edible products will be utilized by wildlife should they not be collected by people.

Landscape Linkages

Ecobelts should not be created as isolated elements in the landscape but instead should be designed as a network of connected linear corridors that function as a system. Based on concepts from landscape ecology, connected ecobelts will offer more benefits that fragmented ecobelts. Environmental services such as wildlife movement, reduced flooding, and improved water quality all benefit from connectivity (Forman 1995). Pedestrians also benefit from ecobelt connectivity when the corridors are designed with pathways.

A system of ecobelts offers the flexibility to meet the desired objectives of rural and urban residents. To accommodate various objectives, ecobelts will vary in width and size much like a road system designed to carry different traffic flows. For instance, an ecobelt in one location may be a narrow corridor primarily designed to address noise and dust issues while producing community Christmas trees. In another location, a wide corridor may be required to provide opportunities for wildlife movement and recreational benefits.

Economic, Social & Ecological Integration

Many successful community-based projects blend together economic, ecological, and social issues into a well-balanced system that addresses residents' goals for their area. Projects that emphasize one set of issues at the expense of other issues will rarely have the community support necessary to implement the plan. Community support is especially critical for ecobelts, which must satisfy a wide range of rural and urban objectives. Traditional greenway projects have succeeded in integrating ecological and social issues such as water quality, wildlife habitat, environmental education, and recreation (Smith and Hellmund 1993). Economics is sometimes overlooked in this equation and yet may be a particularly powerful issue to reconnect urban communities and agriculture. Ecobelt economics can include employment opportunities for youth such as maintenance of the ecobelts, increased property values, agroforestry products, and environmental services such as reduced costs for snow removal and water quality improvement, which would minimize the need for expensive treatment. By exploring the range of economic, ecological and social issues, the glue required to hold together divergent rural and urban interests may be discovered.

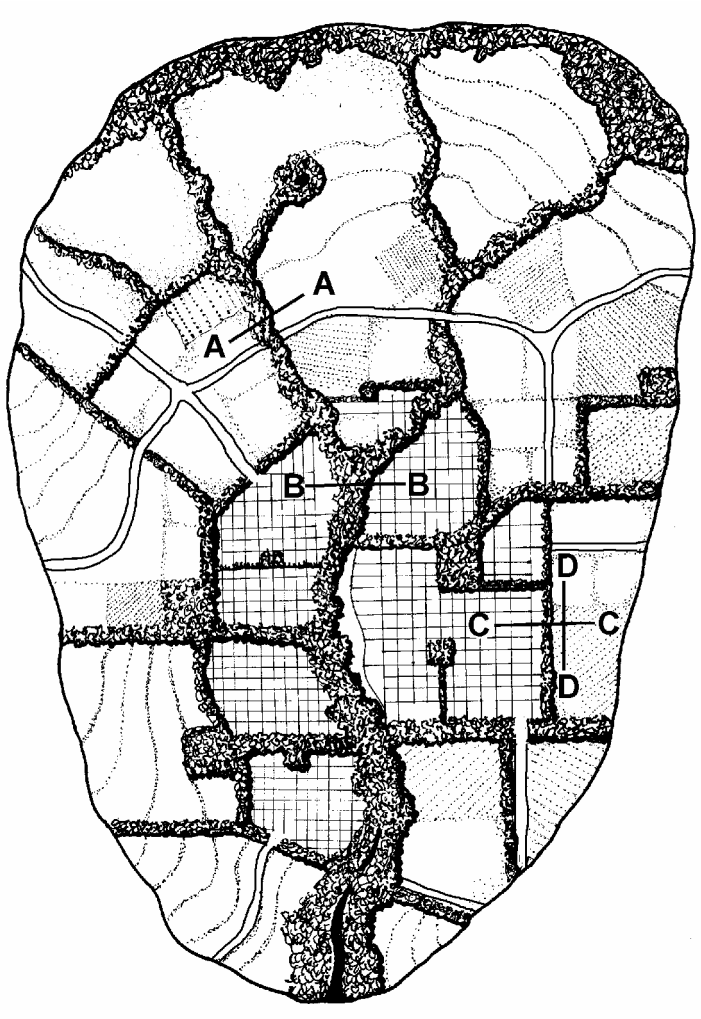

Figure 4. Conceptual Ecobelt Watershed Plan

CONCEPTUAL ECOBELT PLAN

The following conceptual sketches illustrate some of the basic characteristics of ecobelts for a small mixed-use watershed (Figures 4-5). Figure 4 illustrates a network of publicly owned ecobelts with various widths and demonstrates how the location of the ecobelt within a watershed will play a key role in determining the objectives and design parameters. For instance in Section A-A, the ecobelt is designed to address water quality by filtering agricultural runoff through a dense native vegetative buffer which also provides habitat and conduit for wildlife movement. Passive recreation is facilitated by a greenway, exposing urban residents to agricultural environments.

In contrast, Section B-B shows an ecobelt in a more urbanized section of the watershed. Because stormwater flow is often concentrated in urban settings, it is usually treated as a liability. However in this example, a constructed wetland is designed in the ecobelt to treat stormwater before it flows into the stream, reducing the impacts of flooding and turning this problem into an amenity for the community. More active recreation areas are included in the ecobelt, providing a firebreak to protect homes in fire prone landscapes like the western United States. Although wildlife may still benefit from this ecobelt, this objective plays a lesser role than in Section A-A because of its landscape position.

An ecobelt between an agricultural field and residential area is presented in Section C-C. This ecobelt, which serves primarily as a common garden for both rural and urban residents, is protected from noise and spray by a vegetative barrier. Products such as fruits, nuts, Christmas trees, and medicinal herbs can be harvested from this ecobelt, providing residents with inexpensive and locally grown amenities. Because this ecobelt parallels an adjacent road and is properly orientated to winter winds, it also serves as a living snow fence improving driving conditions along this major arterial road. Section D-D illustrates how this same ecobelt can provide views between land uses at selected points. Interpretative signage has been incorporated into the ecobelt to educate residents about different land uses and conservation measures to protect natural resources. The combination of these activities can help foster a sense of community and place.

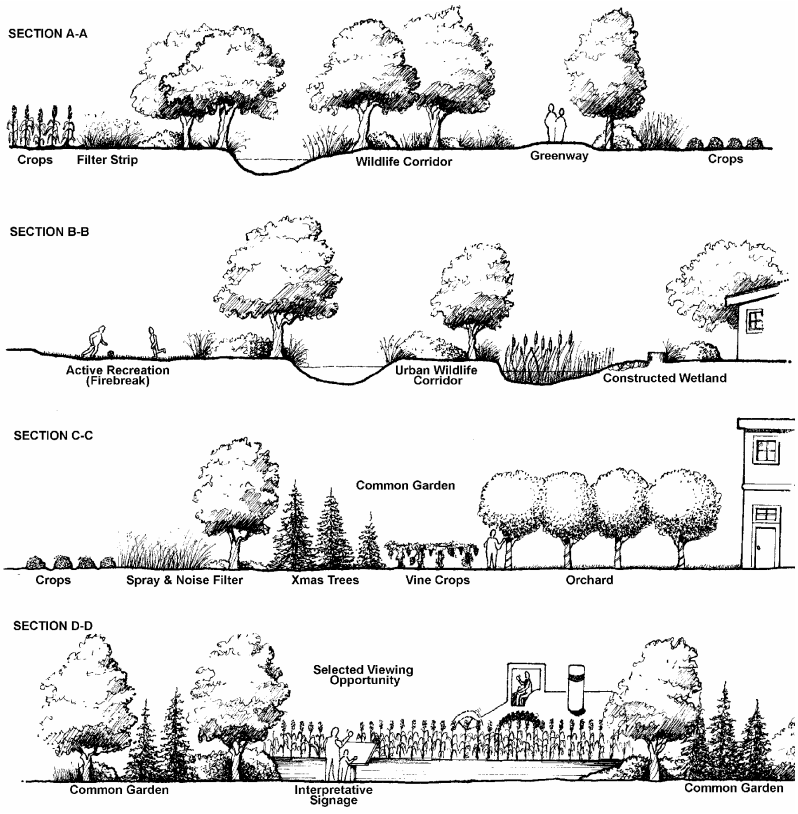

Figure 5. Conceptual Ecobelt Sections

ECOBELT CASE STUDIES

Currently, there are few examples of multi-functional ecobelts that reconnect agriculture and urban communities. We have selected a few examples of greenways and similar projects that exemplify at least some of the fundamental principles of ecobelts. Although few of these case studies actually link rural and urban environments, with a little imaginative thought, one can easily visualize how these examples could be developed into multi-functional ecobelts.

Wisconsin Environmental Corridors

During the 1960s, landscape architect Phillip Lewis Jr. recognized the concentration of important natural resources along waterways and ridgelines and recommended their protection by the state for recreation and conservation (Lewis 1996). The Southeastern Wisconsin Regional Planning Commission (SEWRPC) adopted Lewis' recommendations and, for the past twenty years, has been delineating and protecting environmental corridors throughout a seven county region of southeastern Wisconsin. This region contains several large cities including Milwaukee, Waukesha, and Racine and numerous suburbs that filter into the agriculturally dominated landscape.

Currently, over 467 square miles have been protected as primary environmental corridors representing three basic types: urban riparian, agricultural riparian, and ridgeline (Smith and Hellmund 1993).

Many of the environmental corridors occur along a gradient from urban to agriculture, visually and physically connecting these land uses. For instance in the Milwaukee area, the Root and Milwaukee Rivers and several streams are protected with riparian corridors that range from a few hundred feet to several thousand feet wide and serve multiple objectives in this highly urbanized landscape (Smith and Hellmund 1993). In undisturbed parts of the corridors, native wildlife like white-tailed deer and muskrat find refuge, providing opportunities for wildlife viewing along the pedestrian trails that follow many of the larger corridors. Because the corridors are concentrated along waterways, many of the corridors also attenuate flooding effects. As the corridors radiate away from the urban core, they extend into a transitional zone of residential and agricultural land uses following ridgelines and riparian areas. Trails are often still a central component of these greenways, exposing suburban and urban residents to farming operations. Outside of this zone, the corridors grade into areas dominated by agriculture. These corridors offer critical protection of wetlands, stream channels, and associated woodlands and may protect water quality and aquatic habitat by filtering pollutants from fields.

The design process used by SEWRPC for delineating potential corridors is a simple yet an effective method that begins with a resource inventory mapped on aerial photographs. A geographic information system (GIS) is used to store and analyze resource data such as soils, vegetation, scenic views, hydrology, land use, and wildlife habitat. Each resource feature is assigned a value between 5 and 20 based on relative importance determined by SEWPRC staff and the public. The ranked data are then combined and the cumulative values recorded. Areas with high overall values are designated for protection and are included in the corridor master plan. Corridors in the region are primarily protected through land acquisition and land use regulation. Primary corridors, which are areas with at least 400 acres and a minimum of 2-miles long and 200-feet wide, are acquired by county and state government agencies. Local government often protects secondary corridors that contain between 100 to 400 acres, and at least 1-mile long with no minimum width. Of the 467 square miles of primary environmental corridors in the region, 31% have by acquired by local, county, and state government and 44% that occur on private lands have been protected through regulations (Smith and Hellmund 1993). This comprehensive system of corridors offers many ecological, social, and economic benefits for residents living along these greenways.

Village Homes

Set within the Central Valley agricultural region, Michael and Judy Corbett developed an innovative residential community that incorporates many green development ideas including several ecobelt concepts. The 240 homes of Village Homes in Davis, California are clustered in groups of eight surrounded by community-owned open space connected by pedestrian walkways. The open space was designed as an edible landscape that produces oranges, almonds, apricots, pears, grapes, persimmons, peaches, cherries, and plums, which residents are encouraged to harvest. Incorporating agroforestry into the project has also yielded some direct economic benefits. For instance, almonds are harvested mechanically and sold, contributing about $3,000 to the homeowner's maintenance fund (Corbett and Corbett 2000). Fruit and shade trees in the landscape have also greatly complimented the energy savings provided by the passive solar design of the houses and narrow street layout.

The designer also viewed typical development problems as opportunities. Stormwater is often treated as a liability, delegated to wasteful and expensive storm drainage systems that increase downstream flooding and introduce water quality problems. In Village Homes, lots were graded to drain into a network of open swales designed like ephemeral streambeds with rocks and plants. The runoff is slowed through the swales with check dams to allow the water to percolate into the soil. This cost effective solution saved approximately $800 per household in up-front costs and ultimately irrigates the edible landscape turning this "waste" product into a valuable resource in this semi-arid climate (Figure 6)(Corbett and Corbett 2000).

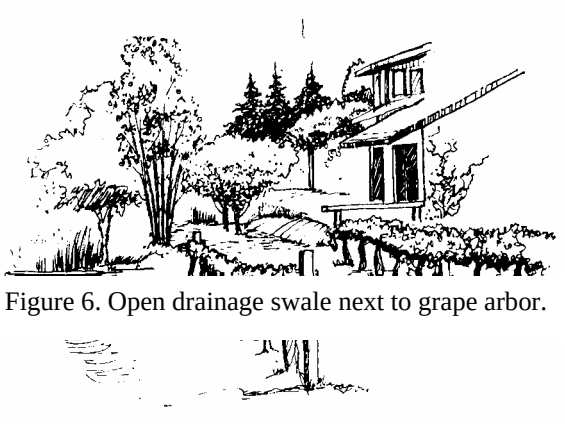

Figure 6. Open drainage swale next to grape arbor.

Village Homes' greatest achievement may be the neighborhood interaction created through the design of open space and pathways. Residents often socialize while picking fruit for breakfast along the meandering paths thus fostering a sense of community. Sharing ownership and maintenance tasks strengthens community cohesion, contributing to a desirable place to live. In 1991, houses at Village Homes were selling for a premium of $11 per square foot over other Davis developments (Corbett and Corbett 2000).

Community Resources Urban Non-Timber Products

One of the main principles of ecobelts is to accommodate the consumptive use of products to provide tangible benefits and as way to build community between urban and rural residents. As in the previous example, Village Homes clearly illustrates the concept and benefits of incorporating edible products within greenways. However, there are many other human consumed goods that can be easily integrated in the design of ecobelts. In one study of Baltimore, Maryland, residents harvested a wide variety of non-timber forest products (NTFPs) from greenways, parks, and other public green spaces. The study documented that over 103 products were collected from 78 species including edible, medicinal, horticultural and craft-based materials (Table 1) (Community Resources 2000).

Table 1. Non-timber Forest Products Collected in Baltimore (# of products)

Edible Products (44)	Medicinal Products (8)	Horticultural / Nursery Products (11)	Craft / Decorative Materials (19)
Fruits / berries (16)	Barks (2)	Seeds for propagation (20)	Decorative greens (6)
Nuts (6)	Leaves / herbs (3)	Bamboo and vines (2)	Seeds, seedpods, cones (3)
Edible greens (7)	Bee products (2)	Leaves for compost	Vines (4)
Edible roots (2)	Medicinal mushrooms (1)	Transplant stock (9)	Barks (4)
Maple sap (2)			Cut tree flowers (2)
Honey (3)			
Mushrooms (8)			

Source: (Community Resources 2000)

The vast majority of NTFP collection is for personal use by residents from a wide diversity of ethnic and socioeconomic groups. Individuals may pick cherries from a vacant lot, collect pinecones from roadsides for

holiday decorations, or gather willow bark from a park for a medicinal poultice. Edible products in particular tend to be collected mostly for personal consumption. Some collectors however do harvest NTFPs for various local outlets including farmers markets while other sell directly to craft stores and grocers.

Whether the NTFPs are used only for personal use or sold in a market, there is a significant economic impact that these species offer to a community. The direct net economic values ranged from $0.30 per pound for pokeweed to over $10 per pound for seeds and mushrooms while the net annual per tree values ranged from $4 per year for a mulberry tree to over $100 per year for mature Chinese chestnut, apricot, and peach trees. When these values are compared with other urban street tree benefits, the importance of NTFPs is clearly demonstrated and the cumulative value of urban trees proves to be very substantial (Table 2). Although this example occurs in a highly urbanized environment, similar opportunities can be created in ecobelts at the interface zone between agriculture and urban environments.

Table 2. Comparison of Urban Tree Values

Urban Tree Values	Range per tree	Type	Source
NTFPs	$4-103 / year	Product trees only	Community Resources 2000
Energy Savings	$1-$32 / year $17-$25 / year	Street and yard trees shading southern walls and windows	American Forests 1995
Pollution Control	$0.04 - $2 / year	All urban trees	McPherson et al. 1994
Carbon Sequestration	$0.03 - $2.25 / year	All urban trees	McPherson et al. 1994

Town Forest – Weston, Massachusetts

A northern European tradition is evident in the designation and management of town forests in many parts of New England during the early days of colonization. Community-owned forests and their important wood resources were protected for use by local citizens for grazing, firewood collection, and timber harvesting. Everyone owned the forest and there were careful regulations on harvesting and grazing in order to manage the resource in perpetuity. However, many of these town forests were converted to private ownership by the end of the seventeenth century, and by the mid-1800s, most of these lands had been cleared for farming.

During 1960s as urban growth encroached on farms and woodlands, communities in New England started to acquire conservation lands to protect open space and provide recreational opportunities through pedestrian and equestrian trails. Weston, Massachusetts, a suburb of Boston established a Conservation Commission to acquire lands to manage natural open space. The energy crisis in the 1970s reawakened interest in utilizing the town's large tracts of forest for firewood and in 1981 Land's Sake, a nonprofit organization, began harvesting firewood. Land's Sake is guided by three central principles: provide ecological care of lands within Weston, involve community and young people in stewardship of the lands, and make the program self-sufficient through the sale of products (Donahue 1999). Their sense of stewardship is evident in their philosophy that land should benefit from human presence, rather than need to be protected from it (Donahue 1999). Timber harvesting is based on mimicking natural disturbances to increase diversification of species and age cohorts. Student internships provide employment for local youth while at the same time offering informal lessons on forest ecology and management. In addition, preservation of the cultural landscape is a key objective in this historically rich countryside.

Over time, as residents became more comfortable with the concept of active forest management versus a hands-off approach, Land's Sake expanded their program to include timber harvest for marketable lumber. With a professional staff of three and student workers, Land's Sake operations now include a 25-acre organic farm, maple syrup production, trail maintenance, and timber management (Donahue 2000). The program typically pays for itself and even returns a little money back to the community. Although there is continued debate about the level of harvesting that can be sustained, there is community consensus that the forest belongs to all and that all should benefit from its services. This example illustrates how the concept of community forests has come full circle from colonial times to the present and how this can serve as a model for future ecobelts.

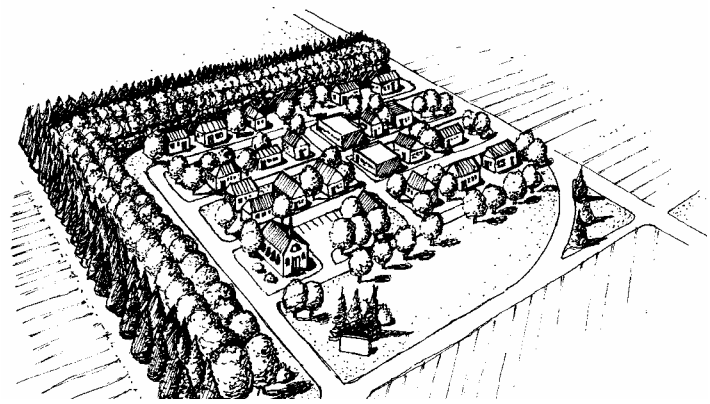

Figure 7. Community Shelterbelt

COMMUNITY SHELTERBELTS – WESTERN MINNESOTA

Community shelterbelts are plantings of single or multiple rows of trees or shrubs in a farm field, but adjacent to a community (Figure 7). Community shelterbelts are commonly established to minimize the negative impacts from excessive wind, and reduce blowing snow, dust, agricultural pesticides and debris to the local community. They also provide recreational opportunities, create wildlife habitat, and produce useful products for small towns and neighborhoods, reduce home heating costs for residents, enhance the aesthetic diversity of otherwise somewhat monotonous expanses, while at the same time reduce conflicts between agricultural producers and residents of the community.

Since 1990, at least ten rural communities have established community shelterbelts on the agriculturally dominated plains of western Minnesota, usually on the north and west sides of town (the most common prevailing wind direction in this area) (Josiah et al. 1999). A diversity of coniferous and deciduous trees and shrubs are used to enhance aesthetics, and provide fruit, nuts and other products that are valuable to both wildlife and people. The plantings have generally met expectations, particularly for protection against wind and blowing snow. Because these are community-based and community-driven initiatives, they have built community cohesion, cooperation and pride. Many of these communities have in the past been literally buried by drifting snow creating dangerous conditions for residents, and creating huge snow removal costs for counties and communities. The older plantings have effectively reduced snow deposition within the communities, significantly reducing the burden of snow removal costs. Indeed, a recent study on the benefits of living snow fences in Minnesota shows a benefit/cost ratio of 17/1 to 29/1 for plantings established on private lands (Josiah et al. 2001). This analysis only considered the reduced costs of snow removal (not reduced commerce, accidents and casualties due to blowing and drifting snow, nor environmental benefits).

Several shelterbelts have also been established around rural schools, largely to protect against wind and blowing snow. In addition, these plantings provide an outdoor teaching laboratory for students to learn of the role and importance of working trees in their environment.

Land is usually acquired through the purchase of perpetual easements, outright purchase, or in some cases, donation by the landowner. Funds are usually secured from a variety of sources, including state, federal and non-profit programs, town and city resources, road departments, fund drives, and in-kind donation of plant materials, machinery and labor by both community residents and producers. Community shelterbelts clearly illustrate the rich potential of ecobelts in agriculturally dominated landscapes.

WHERE DO WE GO FROM HERE?

As evident in these case studies, the various principles of the concept are being practiced in a number of U.S. communities. Many of these efforts are still only vignettes that offer a flavor of what the full potential of ecobelts might be if used to reconnect agriculture and communities. Future case studies that capture the essence of the ecobelt concept will be necessary to provide local governments, agricultural groups, and urban residents with ideas that can serve as a catalyst for their ecobelt projects.

In addition to case studies, stakeholders will need a process to lead them through the development of an ecobelt system. Agriculture and urban landscapes are complex assemblages of interactive components that are continually being modified by humans to produce goods and services, thus a flexible planning process that involves full community participation must be used. The authors have proposed a preliminary planning framework to guide urban and rural residents in creating an ecobelt system that resolves conflicts and helps achieve the future community vision (Schoeneberger et al. 2001). This framework is divided into three basic phases: setting goals, designing ecobelts, and implementing and managing ecobelts. Each phase is guided by a series of questions that assist rural and urban residents in creating a comprehensive ecobelt plan. A question-based approach is used because questions are effective at providing specific but flexible guidance for analyzing resources and developing plans (e.g. Smith and Hellmund 1993; Steinitz 1990). The list of questions is not inclusive, but rather offers a starting point for ecobelt planning. In many cases, the initial questions will lead to other more detailed questions that will need to be answered in the planning process.

The authors are currently in the process of applying this framework in a rural-urban watershed near Topeka, Kansas. Like many cities in the Midwest, Topeka is facing several water quality issues that need to be addressed due to new water quality standards being adopted by the Environmental Protection Agency. Upstream impacts of agriculture and expanding development within and outside of the city pose significant challenges. Using this problem as an opportunity, the City of Topeka's Public Works Department is interested in using stormwater management as a catalyst for improving water quality while creating other desirable amenities for residents. Project managers realize that ecobelts can be part of the solution, offering the potential for solving flooding and pollution mitigation issues while generating recreational, economic, and environmental benefits for residents.

Topeka's effort involves a comprehensive 3-tiered approach. The first component involves retrofitting existing urbanized areas with innovative stormwater management techniques. Options are typically constrained by

existing development but creative solutions still can be found. For instance, Topeka is in the process of removing several lanes of streets in the downtown area, replacing them with a vegetated surface drainage system complete with pedestrian walkways. The second tier is a proactive approach focused on creating "green" infrastructure prior to urban development to avoid expensive future retrofits. The third component places the overall effort in a larger watershed context. Most of the watershed outside of the City's growth areas will remain in agriculture production. The key will be to develop ecobelts that minimize flooding in Topeka while providing benefits to upstream agricultural landowners. Lessons learned from this long-term project will be used to refine the ecobelt planning process.

Ecobelts should be a viable concept for the future, one that will provide numerous rewards for the co-owners of these areas while resolving conflicts between rural and urban residents. Although win-win solutions are the ultimate goal with ecobelts, compromise will still be required in many efforts. Through ecobelt planning and implementation, the barrier between agriculture and communities can be removed and a functional connection reestablished.

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