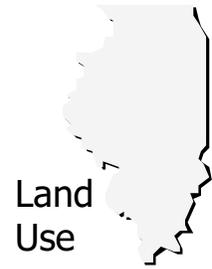




LOCAL GOVERNMENT TOPICS



Environmental Corridors: "Lifelines for Living"

What Are Environmental Corridors?

Environmental corridors are areas in the landscape that contain and connect natural areas, open space, and scenic or other resources. They often lie along streams, rivers, or other natural features. These corridors protect environmentally sensitive areas by providing linkages in the landscape and potential buffers between natural and/or human communities.

Environmental corridors are complex ecosystems that provide an avenue for wildlife movement, protection of natural resources, and green space buffers for humans. These "lifelines for living" help support human, wildlife, and natural resource "communities." The aerial photograph in Figure 1 will help you visualize a corridor and understand its function. Note the intertwining ribbons of natural areas winding across the landscape and through fields and towns.

Another way to think about the use of such corridors is to consider how hallways in a building function. A building contains both hallways, which are places of concentrated movement back and forth, and rooms, which are destination points where people eat, work, play, or sleep. The hallways, or corridors, serve to link the places of activity. People confined to a single room cannot live in a comfortable or natural manner. In fact, they may not be able to survive for very long at all.



Figure 1. Aerial photograph of an environmental corridor. (Reprinted from *Conservation Corridor Planning at the Landscape Level Handbook*, USDA NRCS.)

Why Protect Environmental Corridors?

Just as hallways enhance the operation of a building, environmental corridors increase the value of natural resource areas. Areas of concentrated natural resource activity ("rooms"), such as wetlands, woodlands, prairies, lakes, and other features, become even more functional when linked by environmental corridors ("hallways"). Fish and wildlife populations, native plant distribution, and even clean water all depend on movement through environmental corridors. For example, wildlife populations isolated in one wooded location can overpopulate, die out, or cause problems for neighbors if there are not adequate corridors to allow the population to move about freely. Over 70% of all terrestrial wildlife species use riparian corridors, according to the USDA Natural Resources Conservation Service (NRCS).

In addition to their environmental value, corridors offer social and economic benefits. Environmental corridors can help define a community's sense of place, or distinctiveness, and provide "services," such as snow and wind protection, recreational areas, or stormwater detention. They can also provide valuable outdoor educational settings and potential sites for research. Furthermore, corridors may help maintain a community's aesthetic or historical grounding.

Economic benefits of protecting environmental corridors may include increasing the value of nearby housing sites, reducing the risks of building in areas with soils rated poor for development, providing flood protection, reducing potential expenses of streambank stabilization, and preventing clean-up costs of streams and rivers.

Historical Loss of Corridors

According to NRCS, over 90% of the native grasslands east of the Mississippi River are gone, about 90% of Iowa's wetlands have been removed, and 80% of Indiana's forests have been eliminated.

In Illinois, the presettlement landscape primarily included shallow, slow-moving waterways with wetlands or wooded areas along them. This ecosystem was found throughout much of Illinois'

native prairie areas and woodland savannas. Other areas of the state were wooded with native timber stands.

In the early days of European settlement, many of these areas were cleared and drained, and sod was broken for farming and small villages. However, a relatively natural equilibrium still existed since towns were usually small and compact. Farming practices of the period left many environmental corridors intact because extensive clearing and draining of land was too difficult.

As agricultural practices have become more intensive and urban development more rapid, much larger corridor areas and adjacent habitat have been cleared for fields and towns. Water has been drained from the landscape more quickly and in higher volumes. As the land was drained, the water flow became more concentrated. This change resulted in the eroded, faster streams subject to more extreme highs and lows in water levels that are familiar to us today.

These changes to our waterways have had a major impact on environmental corridors, leaving only isolated pockets of natural areas in many places. The practice of breaking up larger blocks of land, or *fragmentation*, has further reduced native habitat areas and their environmental corridor linkages. Today, the landscape's capacity to sustain a diverse ecosystem may be jeopardized.

When linkages are broken and blocks of habitat are fragmented, one effect is that the remaining areas often leave wildlife more vulnerable to outside predators. Fragmentation of a block of habitat increases the *lineal feet of edge* and decreases the interior areas. Figure 2 illustrates this impact: the right portion of the image shows the original 640 acre block of habitat, while the left portion demonstrates that fragmentation of the block increases the exposed borders by 60%. The initial block has 22,120 lineal feet of edge, while the fragmented block has 38,620 lineal feet of edge.

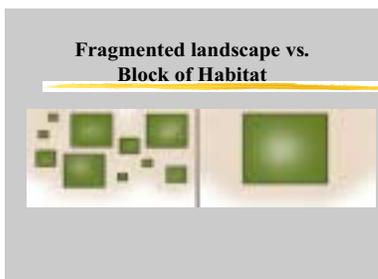


Figure 2. The effects of fragmentation. (Reprinted from *Conservation Corridor Planning at the Landscape Level Handbook*, USDA NRCS.)

In addition to wildlife concerns, fragmented areas may also be less effective in providing such benefits as stormwater detention, wind protection, usable open space, etc.

Corridor Protection Today

Recently, the general public has become more aware of the problems associated with fragmentation of rural and urban environmental corridors.

Conservation design and open space development patterns in urbanizing areas and farm conservation programs in rural areas have begun to address more systematically the importance of maintaining and restoring environmental corridors.

One of the leading examples of corridor protection in the country is in the fast-growing southeastern area of Wisconsin. Several counties in that region have endorsed the protection of environmental corridors through the Southeastern Wisconsin Regional Planning Commission (SEWRPC). As a result, about 75% of the primary corridors in southeastern Wisconsin are now protected.

Protection efforts are underway in Illinois as well. New river protection initiatives in parts of Illinois have prioritized protection of grass and riparian buffers along stream and river edges. Such buffers can help maintain or redevelop environmental corridors. Also, cost-sharing incentives are available to encourage landowners to protect corridors on their property.

Corridor Size and Type

Corridors perform different functions in different environments, and definitions of corridors vary.

The USDA *Conservation Corridor Planning at the Landscape Level Handbook* defines corridors in terms of size and type. In terms of *size*, they are referred to as regional-, watershed-, or farm-size corridors.

1. *Regional* corridors connect large areas (sometimes tens of miles wide) of highly diverse ecosystems. These corridors facilitate major movement of wildlife.
2. *Watershed* corridors are usually miles or fractions of miles wide, and they facilitate wildlife movement within a watershed.
3. *Farm* corridors often only measure hundreds of feet in width, and they facilitate localized wildlife movement.

Each of these corridors also plays an important role in protecting other natural elements in the corridor area.

The USDA handbook identifies five different *types* of corridors:

1. *Environmental* corridors are usually undisturbed natural areas, such as those along streams or forested regions. With proper care, other types of areas may become environmental corridors as well.
2. *Remnant* corridors are typically strips of land left after new land uses have been implemented in an area. These strips usually have some characteristic (for example, they may be too wet or steep, etc.) that prevents their development. The remaining open space or farmland between communities is often categorized as a remnant corridor.
3. *Introduced* corridors are strips of vegetation usually planted for conservation purposes, such as

to serve as windbreaks, filter strips, or riparian areas.

4. *Disturbance* corridors are produced by activities that disturb vegetation in a given strip of land, such as a mowed roadside.
5. *Regenerated* corridors result when regrowth occurs in a previously developed area, such as an abandoned road or rail right-of-way.

SEWRPC uses a different system of categorization, defining corridors as primary and secondary:

1. *Primary* corridors contain concentrations of significant natural resources and are at least 400 acres and 2 miles long, and 200 feet wide.
2. *Secondary* corridors have smaller concentrations of significant natural resources and are at least 100 acres and 1 mile long.

Regardless of the specific definition, a common feature of all these corridors is that they cross human-determined boundaries. Each type of corridor may vary in its value for a specific purpose or the amount of diversity, but they all add some level of biodiversity and functionality, such as stream protection or provision of open space, to the area (see Chart 1).

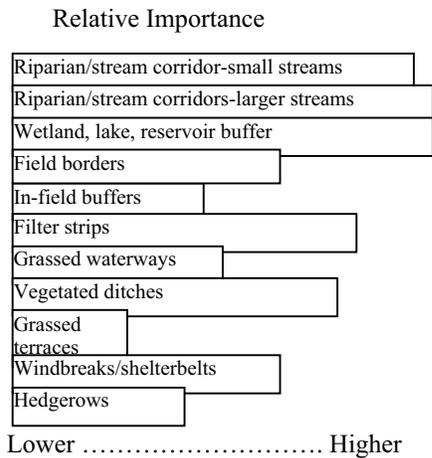


Chart 1. Ranking of the importance of various corridor types for conservation of soil, water, air, plants, and animals. (Data based on NRCS state biologists survey.)

Basic Corridor Principles

In general, corridors that are wider and longer in size, are connected, and have more natural features tend to provide more value and diversity to the environment.

According to ecologists at the NRCS Watershed Science Institute in Raleigh, North Carolina, “when designing a corridor, it is important to look at the individual site, but it is very important to look at the larger scale, also. In reality, a 200- to 300-foot corridor through one property may look good, but to derive the benefits of the corridor, it should attach to a corridor on the next property, and the next, and the next, etc.”

NRCS suggests several basic principles:

- Continuous corridors are better than fragmented corridors.
- Wide corridors are better than narrow corridors.
- Natural linkages should be maintained or restored.
- Two or more corridor linkages are better than one.
- Structurally diverse corridors (that is, those with diverse plants, height of plants, natural features, etc.) are better than corridors with simple structures.

Implementing Restoration and Protection

As mentioned previously, urban development can destroy environmental corridors. Due to increased environmental awareness, however, such development often catalyzes efforts to restore and protect environmental corridors. (*Note:* Ecological definitions of “restoration” vary. Its use here is as a general descriptive term.) The following list identifies some of the major tools for preserving environmental corridors.

- *Planned linkages.* As communities plan developments, open space is becoming a more common design element. Linking such open spaces can create more effective corridors throughout a community. Furthermore, stormwater management plans can incorporate such linkages. Communities often plan ahead for future street and road linkages, and the same sort of advanced planning can be applied to environmental corridors.
- *Intergovernmental agreements.* Linkages should not stop at political boundaries. As communities grow together, intergovernmental open space agreements can protect corridors across boundaries.
- *Community buffers.* Environmental corridors can serve as buffers between communities to help maintain a distinctive sense of place. Boundary agreements between communities have become more prevalent in some areas of Illinois. Those agreements can also include using environmental corridors to maintain open space transition areas between communities.
- *Conservation design.* Existing environmental corridors can be protected or restored by using designs that identify and protect significant natural elements before platting buildable lots.

In rural areas, the most prevalent land use change affecting corridors has been conversion to crop production. While this change may have caused fragmentation, the land can usually be restored to some type of corridor fairly easily. By contrast, many land use changes associated with urban development have eliminated any feasible restoration. Still, rural property owners must also plan carefully to protect and/or restore linkages as a part of their crop, livestock, or other farm enterprises.

While in urbanizing areas protection or restoration is often a decision and cost shared by various community stakeholders, in rural areas the responsibility often rests with individual property owners. However, cost-sharing incentive programs available through federal, state, and some local

governments help reduce the expenses of restoration or protection. Interested individuals should contact their county USDA NRCS office or Soil and Water Conservation District office.

Is There a “Downside” to Environmental Corridor Protection?

Any land use involves some potential risk. If efforts to protect or restore environmental corridors are poorly managed, they can cause deterioration in an area and possibly impact neighboring land uses. Weeds need to be properly controlled, and a monitoring and security system needs to be in place for corridors open to public use.

Appropriate best management practices should be followed to maintain and improve the corridor’s ecosystem so it can function as desired. Due to the nature of these corridors, effective management may require the cooperation of several landowners and/or agencies.

With sufficient planning and management efforts, however, any adverse impacts can be avoided or resolved so that the corridor’s benefits outweigh any negative impacts.

Summary

In recent years, many individuals and communities have become more proactive in protecting open space and natural resources. Protecting and maintaining environmental corridors is one way to enhance the effectiveness of such efforts. While protecting any natural area may provide some benefits, the linkages associated with corridor protection maximize the environmental benefits. Planning ahead is an important part of maintaining or restoring such corridors, whether they be on private land or part of a community development.

Corridors are only one piece of the conservation puzzle. Other important pieces are the various land management practices applied by landowners and communities. The long-term value of corridors depends on the health of the adjacent landscape. Putting together the conservation puzzle

will be much easier if private and public landowners cooperate to pass on the rich heritage our citizens cherish to future generations.

Further Reading:

Randall Arendt. 1999. *Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks*. Washington, D.C.: Island Press.

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Richard Schultz, A. Kuehl, J. Colletti, P. Wray, and T. Isenhardt. 1997. *Stewards of Our Streams: Riparian Buffer Systems*. Iowa State Extension.

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