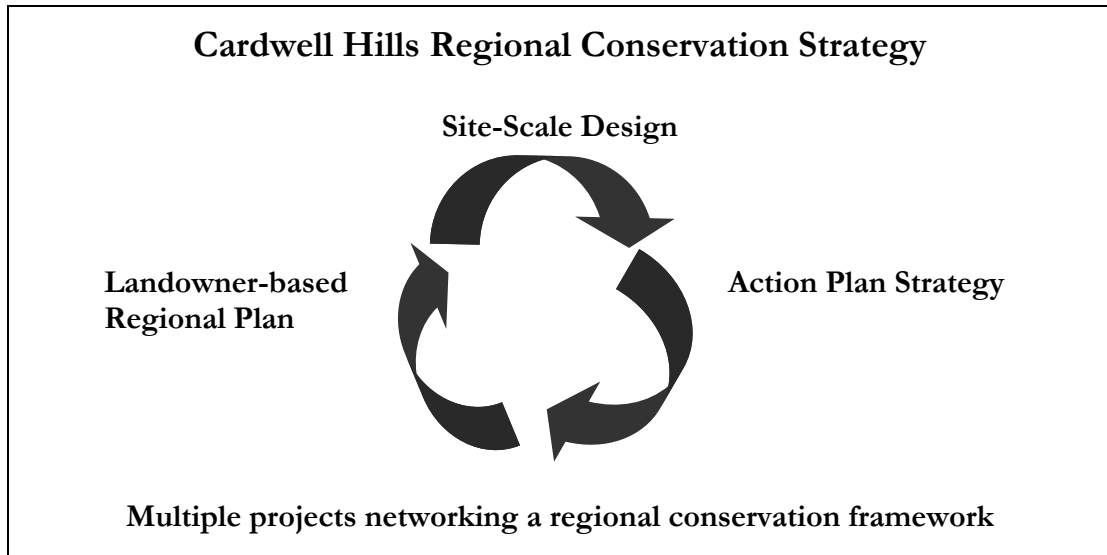
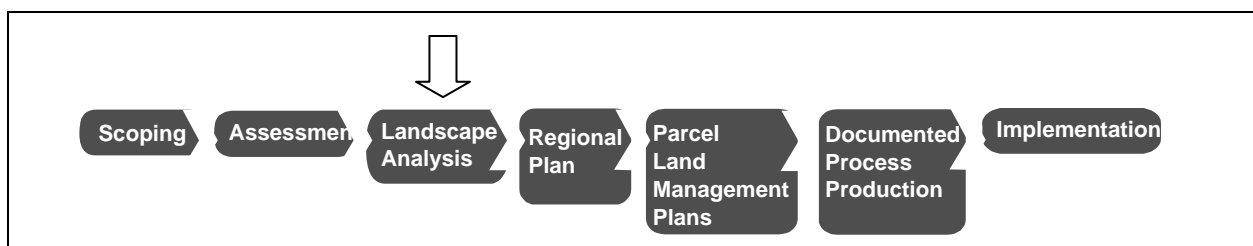
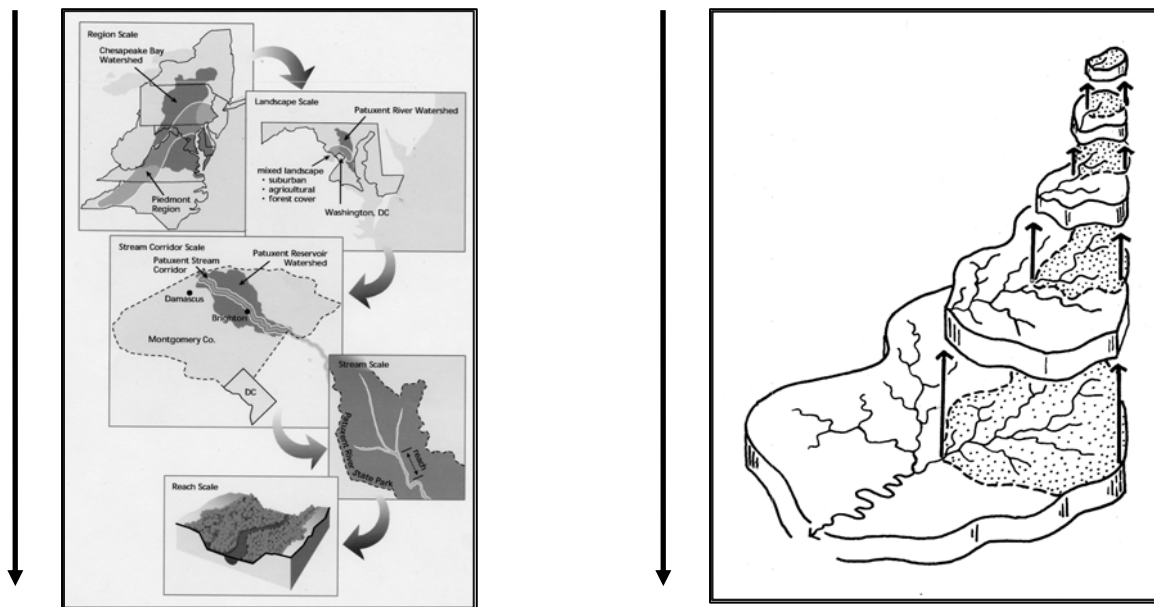


Marys River Watershed Council Cardwell Hills Project – January 24, 2006 – Presentation Summary



Planning and Design at all Scales



Landscape Ecology

- ★ What is a Landscape
- ★ Patches of Habitat
- ★ Edge Habitat v. Core Habitat
- ★ Connectivity
- ★ Stepping Stones
- ★ Connectivity Corridors
- ★ Habitat Barriers

The Landscape in Landscape Ecology

Landscape - A heterogeneous land area composed of a cluster of patches. Landscapes can contain patches of human development and wildlife habitat and vary considerably in size, shape, and structure.

Patches of Habitat

Patch - A surface on the landscape differing in appearance from its surroundings. Areas of oak woodland, chaparral, or residential development are examples of patches within a landscape.

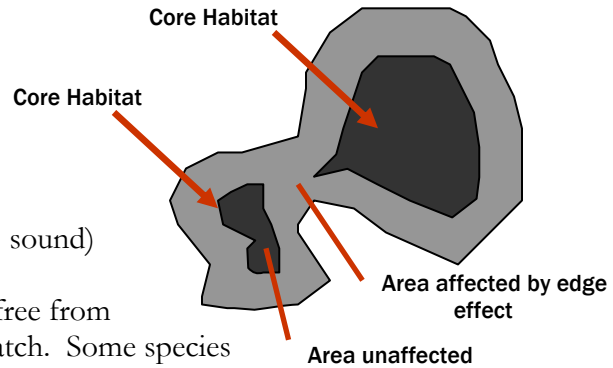
Edge Habitat v. Core Habitat

Edge Habitat - The outer-most band surrounding a patch that has an environment significantly different from the interior of a patch. Edges can be a few feet to several hundred feet wide depending on environmental factors.

Potential contributors to edge effects

- Predators
- Invasives
- Exposure to Wind/Sun
- Temperature/Moisture
- Impact of Human Activities (e.g. sound)

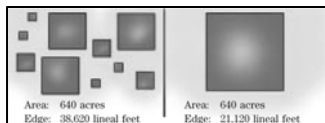
Core Habitat - The part of a habitat patch free from the “edge effect” associated with edges of patch. Some species are especially area-sensitive to the effects of edges. They benefit most from parts of a habitat patch that are sufficiently far away from the edge so that they can best function.



Habitat Fragmentation - The process by which contiguous, large blocks of habitat are broken or sliced into progressively smaller pieces that are unusable to species.

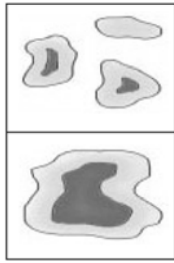


These two patch examples occupy similar areas of habitat, but because the top has become fragmented, it has more low quality edge habitat than the patch below it.



The fragmented landscape on the left has less interior habitat and over 50 percent more edge than the block of habitat on the right.

Creating Core Habitat - For species where habitat quality is linked to the size of a patch and sensitivity to edge effects.



Large reserves/ patches are better than small reserves/ patches.

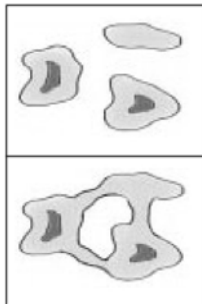


Unified reserves/ patches are better than fragmented reserves/ patches.

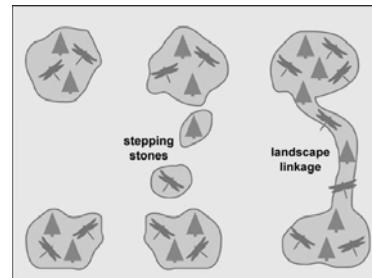
Large patches with greater core habitat tend to have greater biodiversity and habitat quality.

Corridor - A strip of land that differs from the surrounding area on both sides. The strip of habitat along a stream, a windbreak, or railroad right-of-way are examples of natural and human-designed corridors that may function as habitat connections between patches.

Connectivity- Strategies for Linking Habitat



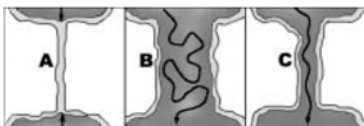
Connected reserves/ patches are better than separated reserves/ patches.



Habitat Corridors and Connectivity

Continuous corridors are better than fragmented corridors.

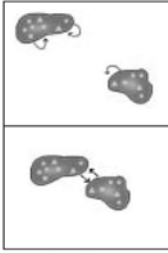
Two or more corridor connections between patches are better than one.



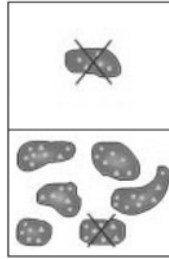
Wider corridors are better than narrow corridors.

Stepping Stones

Conservation networks using adjacent patches



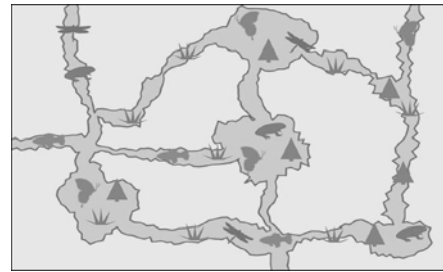
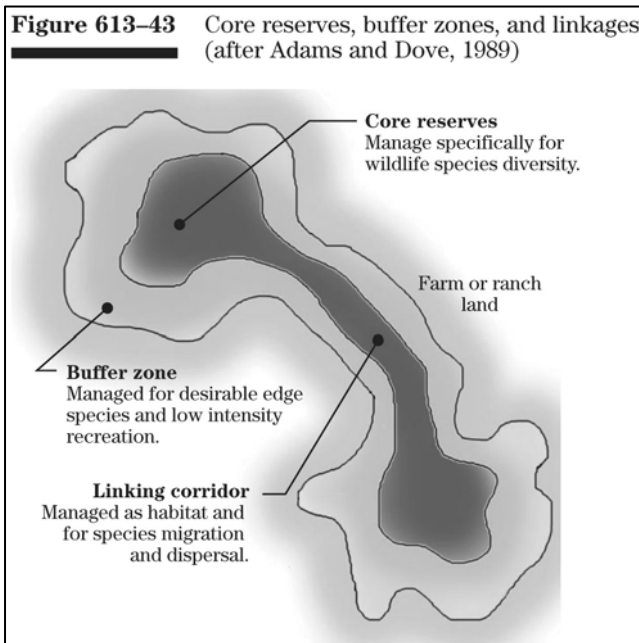
Nearness is better than separation.



Several reserves/patches (redundancy) are better than on reserve/patch.

A Functioning Conservation Network

Figure 613-43 Core reserves, buffer zones, and linkages (after Adams and Dove, 1989)



Multiple Connectivities- Interconnectedness in Reserve Design

Marys River Watershed and Upper Marys Subbasin Upland Priorities

Prairie Habitats

Focal Species

- Western Meadowlark
 - Vesper Sparrow
- Streaked Horned Lark



Prairie Habitat Quality Factors	Prairie Habitat Quality Detractors
<ul style="list-style-type: none"> ▪ For many species, short sparse herbaceous vegetation ▪ Little or no tree canopy ▪ Little shrub cover ▪ Large, open tracts of grassland ▪ Contiguous Habitat ▪ Minimal human disturbance 	<ul style="list-style-type: none"> ▪ Habitat loss from development/land use ▪ Degradation from encroachment of incompatible uses ▪ Non-native plants and structure ▪ Encroaching Doug Fir ▪ Lack of Fire

Oak Savanna Habitats

Focal Species

- American Kestrel
- Western Bluebird



Oak Savanna Habitat Quality - Factors	Oak Savanna Habitat Quality - Detractors
<ul style="list-style-type: none"> ▪ Low Native Shrub Cover ▪ Native Herbaceous Cover, low in height ▪ Open-canopy Oaks ▪ Relatively Low Overall Canopy Cover ▪ Large trees with cavities 	<ul style="list-style-type: none"> ▪ Habitat Fragmentation ▪ Non-native plants and structure ▪ Lack of Fire ▪ Habitat Conversion ▪ Encroaching Doug Fir ▪ Lack of Young Oak Recruitment

Prairie/Savanna Management- General

- Retain all oak trees >22in. Dbh, particularly open-grown oaks
- Enhance size and connectivity of existing grassland and savannah patches
- Manage native and non-native complexes as potential habitat for grassland species, where appropriate
- Limit shrub and tree cover to <10% if possible
- Aim for conservation of areas greater than >80ha (200ac)

Oak Woodland Habitat

Focal Species

- Acorn Woodpecker
- White Breasted Nuthatch
- Western Gray Squirrel



Oak Woodland Habitat Quality - Factors	Oak Woodland Habitat Quality - Detractors
<ul style="list-style-type: none"> ▪ Large Diameter Oaks ▪ High Proportion of Canopy is Oaks, not other tree species ▪ Occasional gaps in Canopy ▪ Connectedness to other, similar habitat patches ▪ Functioning 	<ul style="list-style-type: none"> ▪ Habitat Conversion ▪ Douglas Fir Encroachment ▪ Overcrowding ▪ Invasive understory ▪ Lack of fire

Oak Woodland Management- General

- Emphasize conservation of large patches of oak woodland (target >40ha).
- Increase size and connectivity of oak woodland patches
- Retain all trees greater than 22 inches regardless of context
- Maintain <10% canopy of non-oaks in oak woodland stands
- Provide subcanopy of native shrubs, herbs, and young oaks of varying composition

Riparian Habitats

Focal Species

- Downy Woodpecker
- Red-Eyed Vireo
- Cutthroat Trout



Riparian Habitat Quality- Factors	Riparian Habitat Quality- Factors
<ul style="list-style-type: none"> ▪ Native understory of varying densities ▪ Limited additional uses within the riparian ▪ Large Canopy Trees ▪ Contiguous Canopy Cover ▪ Habitat Snags 	<ul style="list-style-type: none"> ▪ Habitat Conversion ▪ Competition with non-native canopy nesters ▪ Habitat Fragmentation ▪ Invasive plants, especially shrubs

Riparian Woodland Management- General

- Enhance size and connectivity of existing riparian patches (reduce fragmentation)
- Reduce invasive plants in the subcanopy and herbaceous layer
- Where compatible with other objectives, provide vegetative cover in riparian areas over streams
- Restore natural hydrologic processes if possible, especially with respect to floodplains
- Stabilize streambanks where needed