



Trail Planning and Design for Wildlife Impacts

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COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES & WILDLIFE
STEWARDSHIP PROGRAM



2015 Massachusetts Trails Conference
"Sustainable Trails for a Sustainable Future"



MassWildlife's Mission

- Conservation, restoration & management of wildlife & habitat for the benefit of wildlife and the public
- Protecting the state's wildlife diversity



MassWildlife Responsibilities

All freshwater and terrestrial
wildlife:

- Mammals
- Reptiles
- Birds
- Amphibians
- Freshwater fish

All endangered species

(including plants)

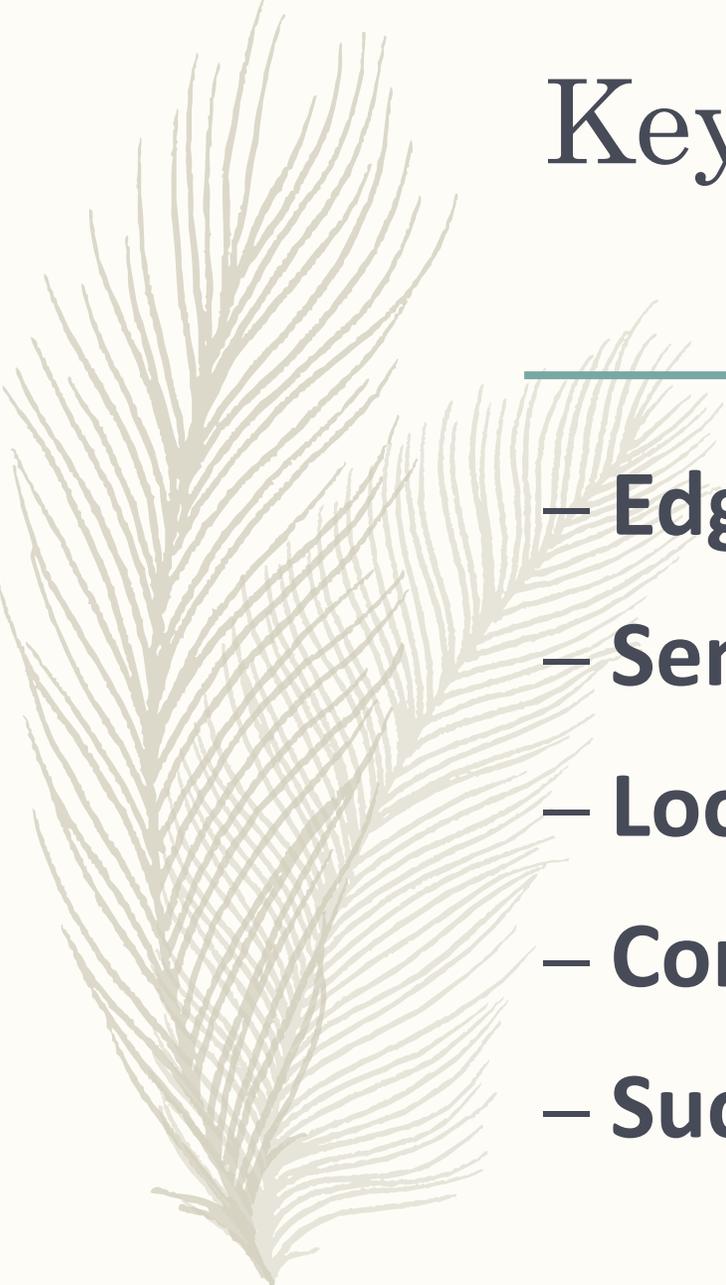


Mass Wildlife Responsibilities



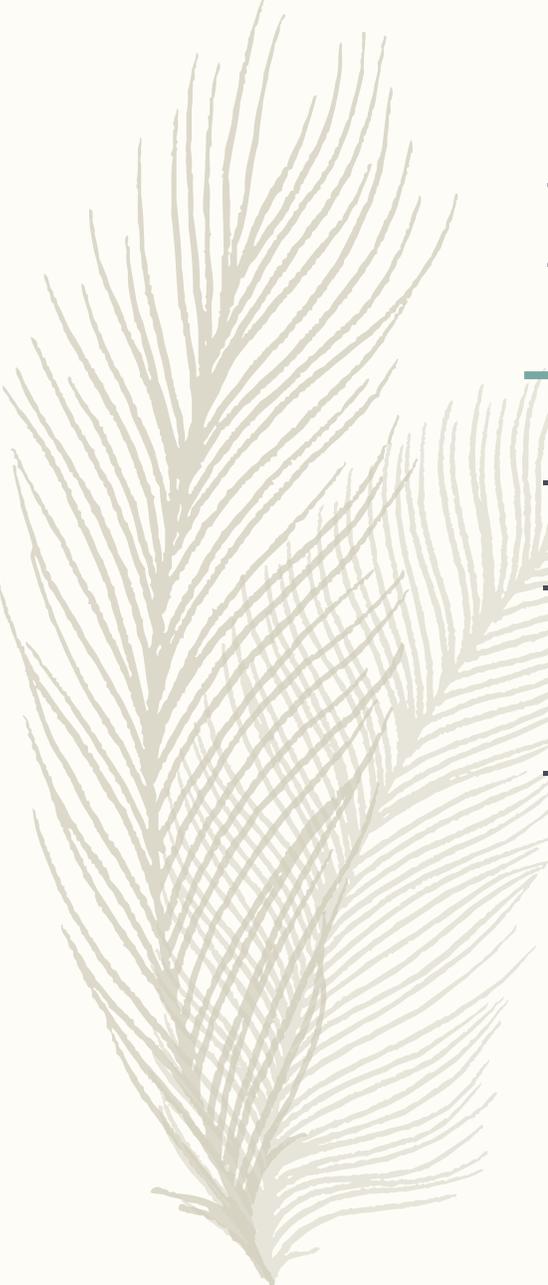
- Provide wildlife-related information & education opportunities for citizens & visitors
- Offer and encourage wildlife-related skills & recreation opportunities





Key Points:

- **Edge & Fragmentation**
- **Sensitive Habitats**
- **Local Wildlife**
- **Considering Wildlife in Practice**
- **Success Story!**



Impacts of Trails on Wildlife:

- All trails have an impact.
- Every trail is unique – look at the overall picture as well as known species.
- What you can do:
 - Look at the type of habitat
 - Consider species affected
 - Make a plan, present and future!



Terms to know

Edge:

- An area of transition between habitats or ecology. Usually indicate increased light and wind between forest and field, or open areas and wooded areas. Causes increased predators and increased vegetation due more light!

Fragmentation:

- The separation of habitats due to edge effects. Influences biodiversity by reducing flow between communities and increases stresses on species population.



Fragmentation and the landscape

- Unbroken Tracts of land support greater biodiversity.
- Wildlife Corridors between habitats remain unbroken

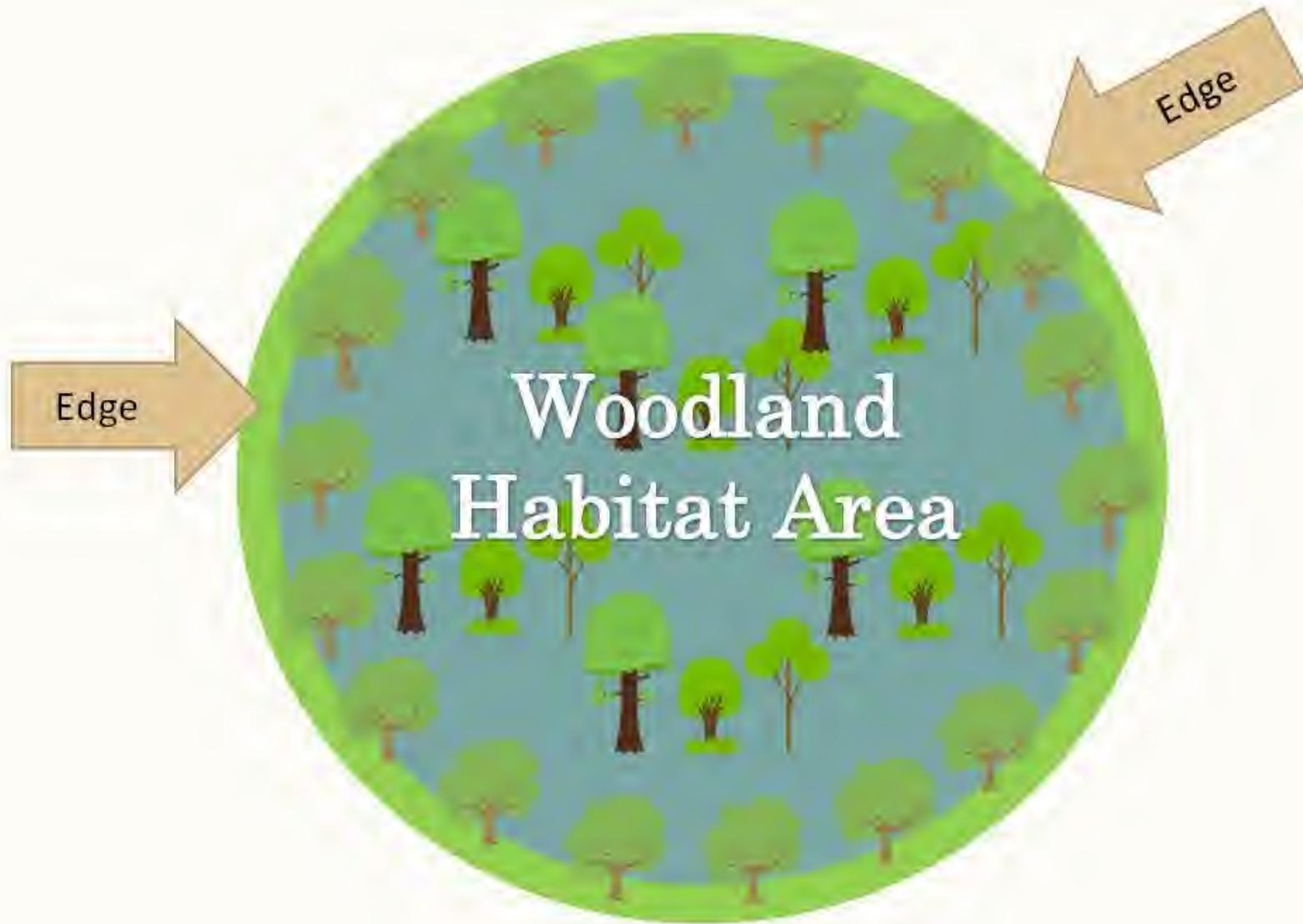




Fragmentation and the landscape

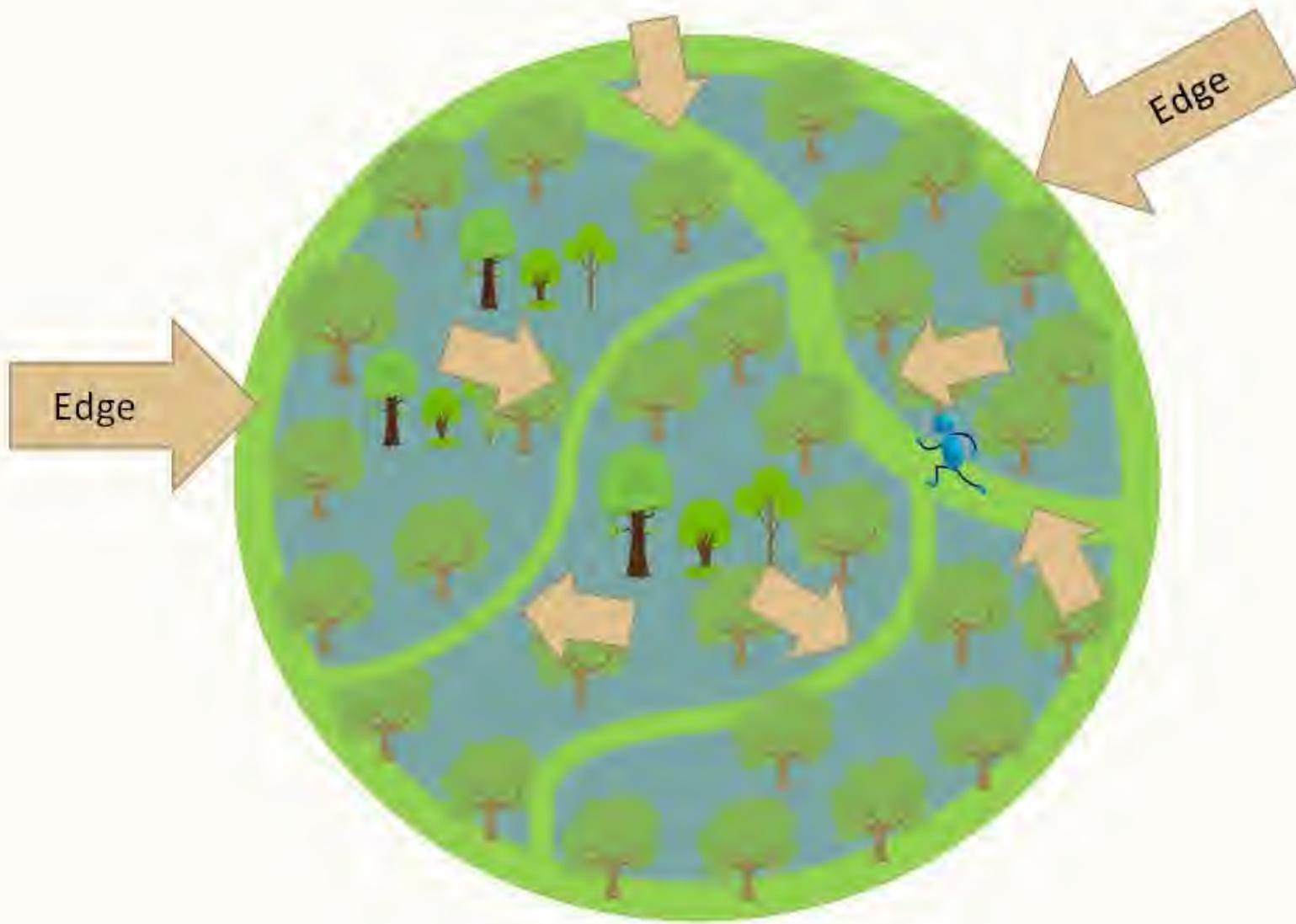
- Loss of Genetic Diversity
- Population Density drops as patch size gets smaller
- Distance between patches affects population health and biodiversity within a patch.





Un-fragmented Habitat

Supports species that avoid edge transition zones. Edge attracts predators, has increased visibility, and most species will retreat to dense cover and canopy. Increased light means changes in plant species and sometimes increased invasive species in disturbed areas.



Fragmented Habitat

Increased light in canopy break zones changes plant diversity. Animals who are startled will turn away from edge zones, creating a fragmented landscape. Many species (such as Shrew) will not cross any open area without cover.



Habitats to watch for:

- Rivers and shoreline
- Grasslands
- Swampland and Wetlands
- Vernal Pools
- Check out the State Wildlife Action Plan at <http://www.mass.gov/eea/agencies/dfg/dfw/wildlife-habitat-conservation/state-wildlife-conservation-strategy.html> for more information



Rivers

- Bank Erosion can effect all species with increased organic matter downstream and the loss of habitat
- Aside from rivers themselves, the banks are important habitat for birds, turtles, beavers, otter, mink and a source of water for many upland species.
- If its an easy access for you to reach, it's an easy access for other animals to use as well.
- Wildlife trails look a lot like man-made trails on rivers.

River Species

Mink

- Use downed trees in forests on river edges to den and for cover
- Active all day long

Wood Turtle

- Nest in sandy banks
- Travel from rivers to fields to feed





Planning with wildlife in mind:

- Near Rivers:
 - Keeping trails a distance away from the banks
 - Leaving areas of bank trail free
 - Keeping dense cover along banks and shorelines intact
 - Avoiding wildlife corridors
 - *Ex. River to Vernal Pools*
 - *Ex. Rivers to Fields*



Grasslands and fields

- Habitat Priority! Becoming more rare with development.
- The bigger the field and with varied terrain, the more species it can support.
- Birds! Bobolink, Eastern Meadowlark, Grasshopper Sparrow, American Kestrel, Upland Sandpiper other MESA species and many more

Grassland Species

Bobolink

- Sensitive to dog disturbances
- Prefer open fields

American Kestrel

- Learn habits of humans quickly
- Sensitive during nesting





Planning with wildlife in mind:

- In grasslands:
 - Keeping trails around the perimeters when possible
 - Dogs can be especially harmful. Leash rules reduce impact.
 - Screening for visual cover, ridges and hedgerows
 - Butterflies? Check the Town Species Viewer for species that may be nearby:

<http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/town-species-viewer.html>



Swamp and Wetlands

- Sensitive to human disturbance
- Lower biodiversity – but high in habitat specialists
- Important to amphibians, reptiles and dragonflies

Wetland Species

Barred Owl

- Hunt in and around wetlands
- Avoid human contact, will leave areas if too much disturbance



Photo Credit: MassWildlife

Spotted Turtle

- Shrub-Scrub Swamps
- Secretive
- Travel to sandy areas for nesting





Planning with wildlife in mind:

- In Wetlands:
 - Hard to plan for water levels, give a large buffer
 - Avoid separating wetland chains or groups
 - Do you need a crossing? Can it be avoided?
 - Points of interest spur trails rather than looping trails if rouge usage is a problem

Spur not Loop

- Keep Wildlife Corridors intact.
- Spurs to interest points slow traffic (Stop and Admire) and keep trails interesting.
- Loops create patches within a landscape.





Vernal Pools

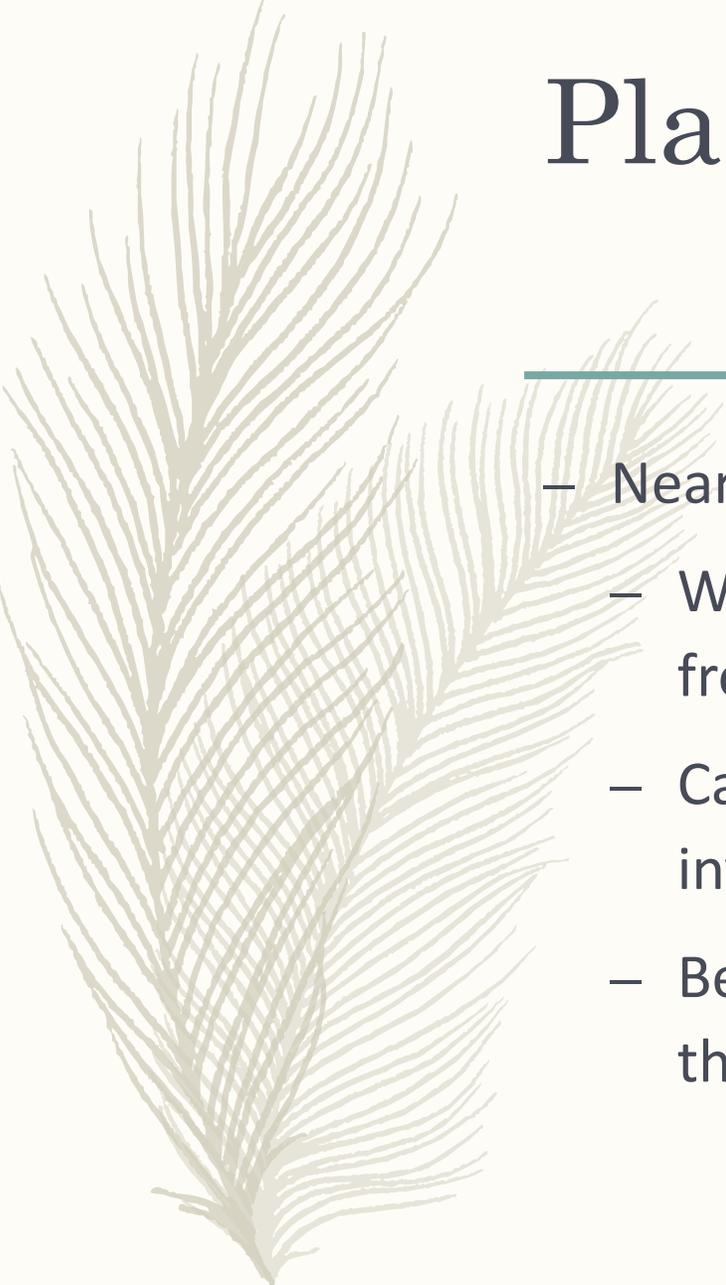
- Difficult to ID when dry in summer
- Many species rely on vernal pools –
Blandings Turtle, Fairy Shrimp, **Salamanders**
- Special risk in urban areas where open space is scarce

Vernal Pool Species

Blandings Turtle

- Need many types of habitat and to move between them
- Vernal Pools for breeding and feeding in early spring
- Very susceptible to illegal poaching
- Shy, easily disturbed. Will “form” into leaves if startled on land
- Attracted to fresh turned soil for nesting





Planning with wildlife in mind:

- Near vernal pools:
 - Wildlife moves between pools, avoid trails that separate them from another
 - Canopy loss near pools can affect salamander populations and invasive species growth
 - Be aware of trail use speed. The faster people move, the greater the impact.

Trail benefits?

Crows

Bears

Coyote



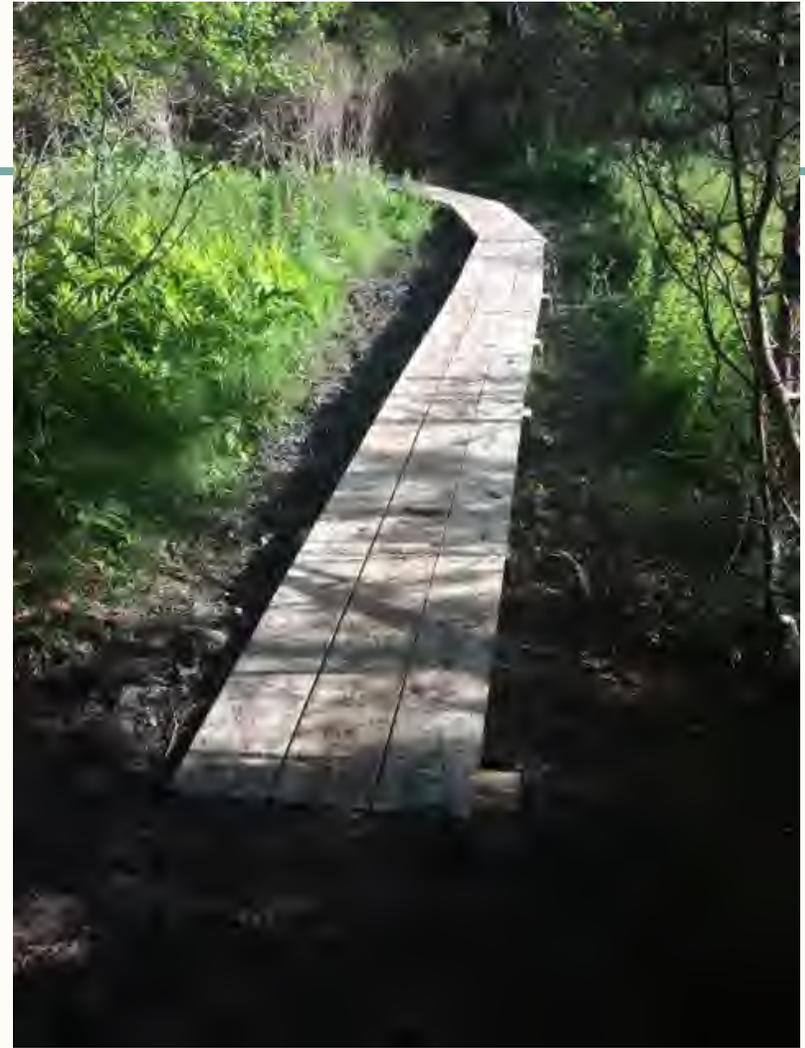
Other impacts and advice:

- The “Speed Factor” of trail use and impact.
- Know your local MESA and Swap listed species
- Visit in several seasons when possible. Look for sign. Check the Town Species Viewer.
- If human impacts are already present, then use those areas first before creating new impact in an unaffected area.
- Predictable movements of people allow wildlife to adjust and adapt. (Screen if possible)

Success Story: Devils Den WCE



Success Story: Devils Den WCE





Resources:

- MA Division of Fisheries and Wildlife Wild Lands Viewer:
 - <http://maps.env.state.ma.us/dfg/masswildlifelands/>
- MA Natural Heritage Town Species Viewer
 - <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/town-species-viewer.html>
- Oliver
 - http://maps.massgis.state.ma.us/map_ol/oliver.php



Resources:

- MA Priority and Estimated Habitat Maps
- <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/regulatory-maps-priority-and-estimated-habitats/>
- BioMap2
- <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/land-protection-and-management/biomap2/>

Thank you!

