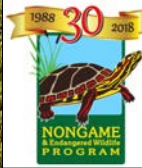


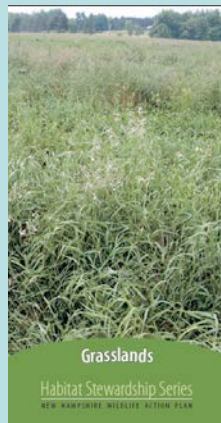


Ecology and Stewardship of NH Wetlands

Michael Marchand
NH Fish and Game Department

Habitat Stewardship Series



Available in PDF format
www.WildNH.com



UNIVERSITY of NEW HAMPSHIRE
COOPERATIVE EXTENSION



SUSTAINABLE
FORESTRY
INITIATIVE

What is a Wetland?



Wetlands in New Hampshire

Env-Wt 101.99 NH Code Administrative Rules

Areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions



Wetlands in New Hampshire

- Dominance of wetland vegetation



Size does not matter!

- Hydric (wetland) soils



- Wetlands hydrology



Important Wetland Functions



- Flood control

- Absorb surface water and release it slowly



Important Wetland Functions



- Flood control
- Drinking water

- Absorb surface water and release it slowly
- Filter contaminants and excess nutrient



Important Wetland Functions



- Flood control
- Drinking water
- **Recreation**

- Absorb surface water and release it slowly
- Filter contaminants and excess nutrient
- **Paddling, swimming, bird watching, fishing and hunting**



Important Wetland Functions



- Flood control
- Drinking water
- Recreation
- **Wildlife habitat**

- Absorb surface water and release it slowly
- Filter contaminants and excess nutrient
- Paddling, swimming, bird watching, fishing and hunting
- **Breeding, feeding, overwintering, migrating, and travel habitat wildlife**



Why care about wetlands?



Over 90% of wildlife species in New England use wetlands to meet their habitat needs at some point in their life cycle

Wildlife use of a wetland:



- Portion of year wetland holds standing water
- Water depth
- Types of vegetation in and around wetland
- Wetland size
- Proximity to other habitats

You can use these factors to predict what wildlife will use any wetland

How long does the wetland hold water?

Hydroperiod is how long a wetland holds water

Short
hydroperiod



<4 months

Intermediate
hydroperiod



4 months to all year

Long
hydroperiod



doesn't dry

————— how long wetland holds water —————

Hydroperiod can vary from year to year

Three Parameters of a Jurisdictional Wetland: Indicators of wetland hydrology

- area inundated for at least 2 consecutive weeks during the growing season
- wetland drainage patterns (e.g., stream channels)
- water stained leaves in dry wetland basins
 - water stains
- buttressed tree trunks
- shallow roots



How deep is the water?

Water depth influences water temperature and what plants will grow.

water depth

>10-12 feet



- too deep for plants
- required by trout

~3.5 to 7 feet



- floating-leaved aquatics
- too deep for emergents

3 feet or less



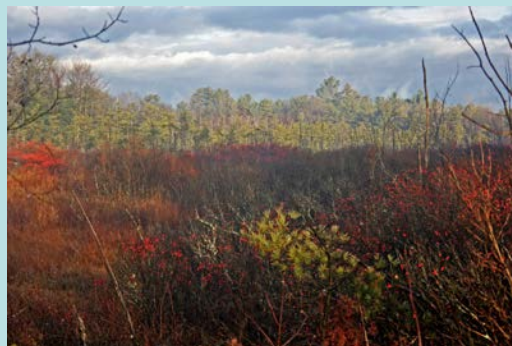
- emergent plants
- dabbling ducks

What type of vegetation/structure is present?



Emergent vegetation

Dense shrubs



What type of vegetation/structure is present?



Open water



Snags and fallen logs

Does wetland size matter?

Yes, for some:



Most birds have minimum wetland size requirements for breeding:

American bittern – 10-25ac. min.

Pied-billed grebe – 12ac. minimum

Common loon – prefer >60ac. lakes

No, for others:



Success of amphibian breeding is determined by hydroperiod, not wetland size.

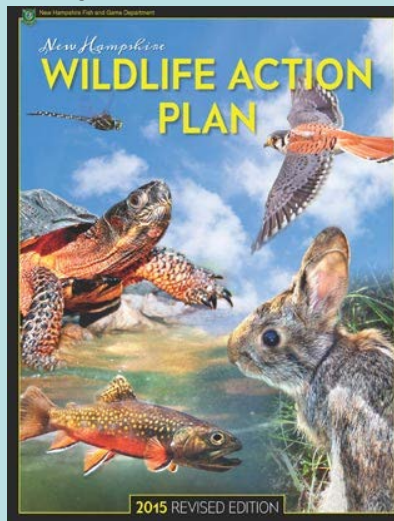
To maintain the greatest diversity of wetlands wildlife:



Must maintain a diversity of wetland types!

Wetland Types

- Marsh and Shrub
- Peatlands
- Forested Wetlands (temperate and northern swamps)
- Vernal Pool



Marsh and Shrub Wetlands

A variety of wetlands fall into this category



scrub-shrub wetlands



emergent marshes



wet meadows

Emergent marshes

Emergent marshes are wetlands that contain a variety of aquatic plants that grow out of the water



Emergent marshes

Are permanently flooded or dry only in very dry years

Areas with vegetation up to three feet deep

Deeper parts often lack emergent vegetation and appear as open water



Wildlife of Emergent Marshes



beaver



Blanding's turtle
NH State Endangered



herons and bitterns



pied-billed grebe
NH State Endangered

Wildlife of Emergent Marshes



red spotted newt



bullfrog tadpole



green frog



dragonfly larva

Shrub Wetlands



Shrub Wetlands



Scrub-shrub wetlands usually contain standing water that can be shallow or many feet deep

Wildlife of Shrub Wetlands



Rusty blackbird
Special Concern



Spotted turtle
NH State Threatened



New England cottontail
NH State Endangered

Wet Meadows



Wet Meadows



Wildlife of Wet Meadows



Northern harrier
NH State Endangered



Northern leopard frog
Special Concern



Ribbon snake

Peatlands

Bogs

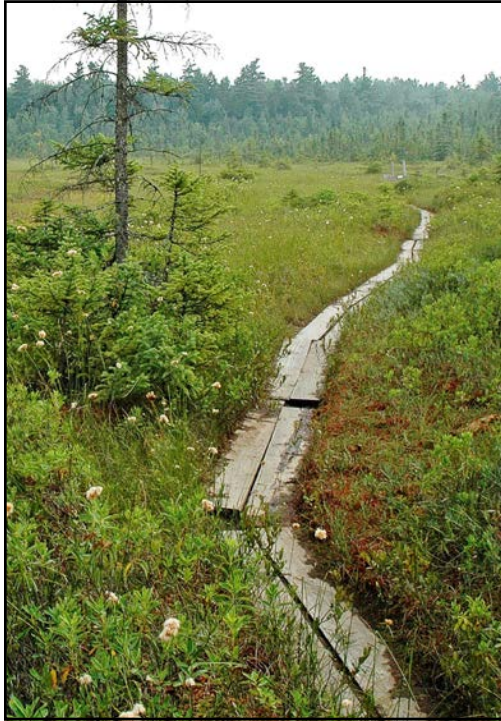


Peat swamps



Fens





Quaking Bog

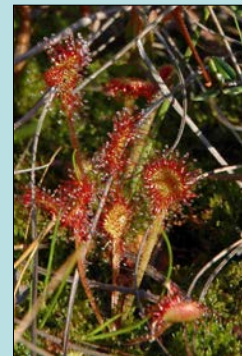


Carnivorous Plants



pitcher plant

horned bladderwort



round-leaved sundew



Wildlife of Peatlands



Ringed boghaunter dragonfly
NH State threatened



Moose



Spruce Grouse
Special Concern



Northern bog lemming Special Concern

Forested Wetlands



Atlantic white cedar swamp

Many of these
are not identified
in the National
Wetlands
Inventory (NWI)
data.



Silver maple floodplain forest

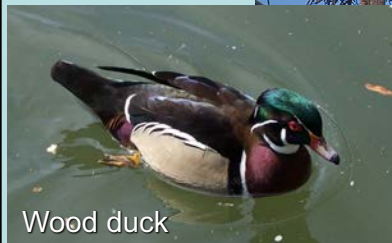
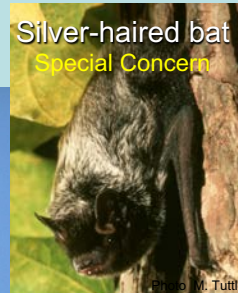
Forested Wetlands



Wildlife of Forested Wetlands



great blue
heron
nesting
colony



Vernal pools

Vernal pools are wetlands that fill with water in the spring or fall...



vernal pool in spring with water



dry vernal pool in summer

and *usually* dry during the summer.

Vernal pools



or can be part of larger wetland complexes

Can be small, isolated pools....



Must have no *permanently* flowing outlet to qualify under regulations as a vernal pool in New Hampshire

Vernal pools

Fish can't maintain *viable* populations in wetlands that dry

A wetland must lack a viable fish pop. to qualify as a VP in NH



There are fewer aquatic insect predators in wetlands that dry

Wildlife of Vernal Pools



wood frog



spotted salamander



fairy shrimp



Jefferson's/blue-spotted salamander
Special Concern

Amphibians of vernal pools

All spend the majority of the year in the uplands around the breeding pool, under logs and leaf litter

Upland habitats provide critical feeding, over-wintering, and dispersal habitat



Species	average migration distance	juvenile dispersal distance
spotted salamander	358 feet	max >427 feet
wood frogs	400 feet	up to 8300 feet

Can't have viable vernal pool communities if you don't maintain the uplands surrounding the pools

Wetland Dynamics



Role of beavers in wetland diversity

Beaver colonization and abandonment of streams results in a predictable progression of wetland habitat types and conditions:

COLONIZATION



flooded forest



emergent marsh

ABANDONMENT



sedge meadow/marsh



shrub wetland

New Hampshire Fish & Game Department

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Blandings turtle (Emydoidea blandingii)

1 2 3 4 5 6 7 Previous Next Pause

Tell us what you've seen!

WELCOME to NH Wildlife Sightings, a web tool for reporting wildlife observations in New Hampshire.

It's for everyone — landowners, foresters, outdoor sportspeople, wildlife enthusiasts... And it's easy!

- Begin by creating your own [user account...](#)
- [Learn](#) how to use the reporting tools
- Review our wildlife [species of interest](#)
- [Visit links](#) of related information.

NH Fish & Game's Nongame and Endangered Wildlife Program

Protecting over 400 species of mammals, birds, reptiles, and amphibians, as well as thousands of insects and other invertebrates.

[Read more...](#)

Tips for Wildlife Watching in New Hampshire

Get ideas on tools for wildlife viewing, viewing ethics and responsibilities, photo tips, and how to increase your chances of seeing wildlife.

[Read more...](#)

NH Wildlife Management Conservation Areas

Find locations of undeveloped land owned by N.H. Fish and Game Dept. and designated as areas for wildlife conservation, hunting and fishing.

Property Stewardship



Learn where the wetlands are on your property and keep track of what wildlife species use them.

Maintain tree, shrub and ground cover around wetlands for wildlife.



Minimize fertilizer and pesticide applications to lawns.

Property Stewardship

- Developing **stewardship plan** that incorporate species concerns
- Trails- Avoid sensitive habitats such as vernal pools and nesting areas.
- Avoid circling wetlands
- Leave some areas without trails.
- Prohibit motorized vehicles in sensitive areas.
- Non-motorized activities can have impacts



Erosion Control Netting



Natural materials preferred over welded plastic

Landscape-Level Considerations



Road-kill a significant form of mortality for some wetlands wildlife

Plan locations of any new road ways to avoid obvious road-crossings

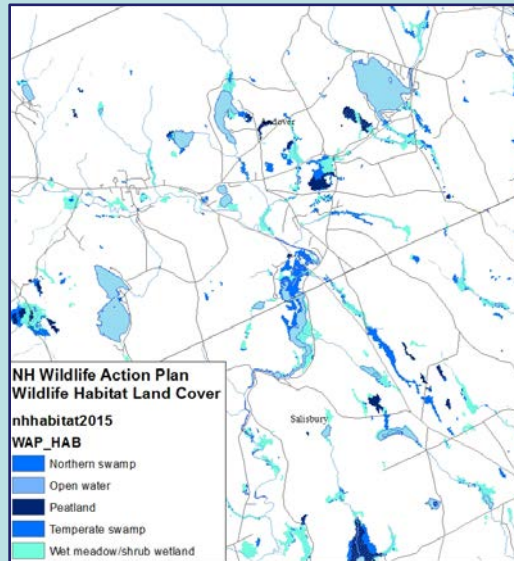
Under-sized and perched culverts are a flooding risk & restrict wildlife movement

Use properly-sized culverts, open-bottom culverts/bridges best for wildlife



Wetlands Mapping

- NH Wildlife Action Plan Habitat Land Cover
- National Wetlands Inventory (NWI)



Resources

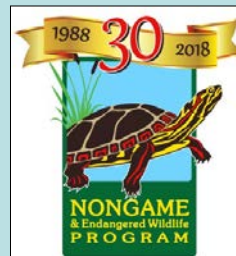


- Taking Action for Wildlife
 - NH Wildlife Action Plan
- Habitat Stewardship guidelines
 - Vernal Pool Manual (NHFG)
- Good Forestry in the Granite State
- UNH Cooperative Extension foresters and NHFG biologists
- Consulting foresters and biologists



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Confused?



Any Questions?