



WILDLIFE HABITAT INCENTIVES PROGRAM (WHIP) NEW HAMPSHIRE STATE PLAN

I. BACKGROUND

The Wildlife Habitat Incentives Program (WHIP) is administered by the Natural Resources Conservation Service (NRCS). This voluntary program offers technical and financial assistance for restoring, developing and enhancing wildlife habitat on eligible land.

This plan identifies New Hampshire NRCS' objectives, national and state priorities, conservation actions, partnership involvement, program administration, and the criteria we will use to measure success.

II. STATE OBJECTIVES

The New Hampshire State Technical Committee (STC) has identified several habitats which are rare or in decline and have the ability to be restored. The WHIP priority goals listed below are based upon this input but are not exclusive.

- Protect, restore, or enhance habitats for threatened, endangered, and candidate wildlife and plant species.
- Protect, restore, or enhance alpine, vernal pool, floodplain, grassland, shrubland, pine barren, subaqueous and estuarine habitats.
- Reduce the impacts of and control invasive species in cliffs, coastal islands, dunes, rocky ridge and talus slopes, floodplain forests, salt marshes, and other lands known to or with the potential to house endangered, and or candidate wildlife and plant species.
- Continue to work with our partners and develop new partnerships with organizations having specific wildlife and habitat expertise to develop ecologically significant conservation plans that meet local needs and have a high potential for success.

III. NATIONAL PRIORITIES

NRCS has established the following national priorities:

- Promote the restoration of declining or important native wildlife habitats.
- Develop, restore, protect or enhance wildlife habitat of at-risk species (candidate species and state and federally listed threatened and endangered species).
- Reduce the impacts of invasive species on wildlife habitats.
- Protect, restore, develop or enhance declining or important habitats for aquatic wildlife species.

IV. STATE PRIORITIES

The New Hampshire State Technical Committee has decided to adopt the New Hampshire Wildlife Action Plan (NHWAP) (http://www.wildlife.state.nh.us/Wildlife/wildlife_plan.htm), written by New Hampshire Fish and Game, as a basis for developing the New Hampshire WHIP plan. It identifies habitats at several scales and provides GIS maps which include habitat distribution and condition. These will assist NRCS in the development of conservation plans for wildlife habitat improvement. The small and medium scale habitats (generally in the magnitude of 0.01 to 2000 acres) identified in the NHWAP have been prioritized by the State Technical Committee as those most suitable for New Hampshire NRCS conservation efforts. These habitats are summarized below and can be accessed directly from the NHWAP link above. The STC recommendations and comments for each of these priority habitats can be found in the *General Information and Resource Concerns* section of each habitat.

Alpine

Definition: High elevation peaks and ravines above treeline in the White Mountains. Alpine zones are characterized by low temperatures, short summers and high winds as compared to surrounding lowlands.

Important Wildlife: American pipit, White Mountain arctic, White Mountain fritillary

Natural Communities: Alpine cliff, Alpine heath snowbank, Alpine herbaceous snowbank/rill, Alpine ravine shrub thicket, Bigelow's sedge meadow, Black spruce/balsam fir krummholz, Diapensia shrubland, Dwarf shrub - bilberry - rush barren, Felsenmeer, Labrador tea heath - krummholz, Moist alpine herb - heath meadow, Montane heath woodland, Montane landslide, Red spruce - heath - cinquefoil rocky ridge, Sedge - rush - heath meadow, Sheep laurel - Labrador tea heath - krummholz, Subalpine cold-air talus barren, Subalpine rocky bald, Subalpine sliding fen

- The most challenging issues facing alpine habitat are recreation, climate change and acid deposition.

General Information and Resource Considerations: 99% of the alpine habitat in New Hampshire is under federal ownership and will not qualify for WHIP funds unless the benefits are on private lands. The summit of Mount Washington is a state park, and WHIP funds may be used there on a limited basis. Because of the rarity of this habitat, the State Technical Committee felt it was important to include in this WHIP plan.



Grasslands

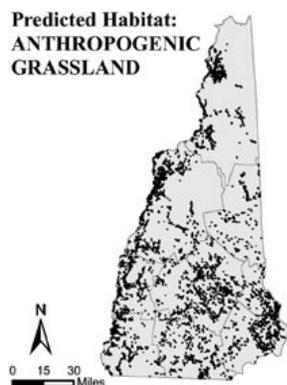
Definition: Patches of herbaceous vegetation consisting primarily grass species. Large grasslands are generally greater than 75 acres in size. They provide habitat for upland sandpipers and grasshopper sparrows which require large contiguous tracts for breeding. Small grasslands are 10 to 75 acres in size. They provide summer breeding habitat for bobolinks, eastern meadowlarks, savannah sparrows and other wildlife. In the fall they provide food for migrating sparrows, larks, and warblers.

Important Wildlife: American bittern, American woodcock, Blanding's turtle, Eastern hognose snake, Eastern meadowlark, grasshopper sparrow, horned lark, migrating/wintering birds, Northern harrier, Northern leopard frog, purple martin, smooth green snake, upland sandpiper, vesper sparrow, whip-poor-will, white-tailed deer*, wood turtle, black racer

**Big game species addressed in Big Game Plan Management Plan*

Natural Communities: Grasslands are created, managed, and maintained by human actions. They are not described in the New Hampshire Natural Heritage Bureau natural communities' classification.

General Information and Resource Considerations: The GIS layer for grasslands provided in the NHWAP evaluates size and condition of grasslands across the state. Airports such as Pease and Manchester offer some of the best grassland populations of threatened and endangered species in the state. Many grassland species can only utilize sites larger than 20 acres. Referencing known populations of grassland species is important when proposing grassland management and creation to landowners. Grasslands with high biodiversity are able to support a wide variety of species. Considerations for grassland management include: proximity to other high quality grasslands, soil conditions, and site location for cost effective equipment access. Native warm season grasses such as switchgrass, little bluestem and big bluestem offer distinct advantages in grassland habitat restoration and management and should be considered in the planning process. When factors for grassland habitat management are limiting, management as shrubland may be a suitable alternative.



Shrublands

Definition: Shrublands are habitat patches occupied by woody plants typically less than ten feet tall with scattered open patches of grasses and forbs that provide floristic diversity. Wildlife that occupy and make use of shrublands and old fields also inhabit power line rights-of-way, abandoned farmland, restored strip mines, and regenerating clear-cuts.

Important Wildlife: American bittern, American woodcock, black bear*, bobcat, Canada lynx, Eastern box turtle, Eastern hognose snake, Eastern towhee, golden-winged warbler, moose*, New England cottontail, migrating/wintering birds, Northern harrier, purple finch, ruffed grouse, smooth green snake, timber rattlesnake, whip-poor-will, white-tailed deer*, wood turtle, black racer

**Big game species addressed in Big Game Plan Management Plan*

Natural Communities: Most shrublands are created, managed, and maintained by human actions. They are not described in the New Hampshire Nature Heritage Bureau's natural communities' classification.

- The most challenging issues facing shrublands are vegetative succession and urban development.

General Information and Resource Considerations: The New England cottontail is in decline in New Hampshire and has been recommended by the NHSTC as a prime species for habitat restoration efforts. New England cottontail requires shrubland habitat of at least 5 acres. Cottontails are very vulnerable to predation in smaller patches. The NHWAP identifies historical and existing cottontail populations and provides information on potentially suitable areas to manage for cottontails. In general, the cottontail inhabits Rockingham, Strafford and Hillsboro counties. Because grasslands and shrublands have similar management strategies, shrubland management in current or historic cottontail habitat should be considered when the site and scale are appropriate. On sites larger than 20 acres with close proximity to other grasslands, management as grassland may yield a higher ecological benefit. Because cottontail is able to utilize several invasive shrubs, potential sites with severe invasive plant problems could still be considered for cottontail. Care should be taken with machinery and roads to reduce the spread of invasive plants to adjacent parcels. In addition, cottontail need tender herbs and grasses for their summer diet so dense thickets of shrubs will need to be thinned to increase habitat value.

Caves and Mines

Definition: Caves and mines are distinguished from all other New Hampshire habitat types by being located below ground. Cave and mine habitat does not represent an ecosystem, but rather an abiotic habitat type.

Important Wildlife: Eastern pipistrelle, Indiana bat, Northern myotis, Eastern small-footed bat

Natural Communities: Not Applicable.

- Mines providing the best bat hibernacula habitat, as evidenced by bat numbers, include one each in Coos, Grafton, and Merrimack counties.
- The most challenging issues facing the habitat that caves and mines provide are recreational activities such as spelunking and geocaching.

General Information and Resource Considerations: NRCS will need to consult NH Fish and Game if a potential cave project is proposed for WHIP program assistance. The basis of the management will consist of gating the cave to exclude people and allow bat hibernacula to exist.



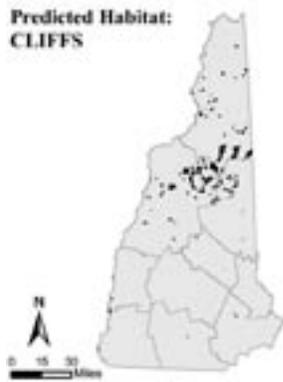
Cliffs

Definition: Cliffs are steep rock outcroppings that exceed three meters in height and 65 degrees in slope.

Important Wildlife: golden eagle, peregrine falcon, Eastern small-footed bat

Natural Communities: Alpine cliff, Appalachian oak - pine rocky ridge, Circumneutral rocky ridge, Cliff seep, Lowland acidic cliff, Lowland circumneutral cliff, Montane acidic cliff, Montane circumneutral cliff, Red spruce - heath - cinquefoil rocky ridge

General Information and Resource Considerations: Cliffs often house rare plants such as bryophytes. Cliffs and adjacent landscapes may have perennial seeps which can support rare wetland habitat in an upland setting. Use exclusion will help protect rare plants and species such as peregrine falcon that use cliffs as nesting sites. Controlling invasive species and improving surrounding habitat are important management considerations for cliffs.



Coastal Islands

Definition: Islands associated with New Hampshire’s estuaries and open oceans which are key upland habitat for species in coastal environments.

Important Wildlife: Arctic tern, black guillemot, common tern, least tern, purple sandpiper, roseate tern, migrating/wintering birds

Natural Communities: Coastal rocky headland, Coastal shoreline strand/swale, Highbush blueberry - winterberry shrub thicket, Maritime intertidal rocky shore, Maritime rocky barren, Maritime shrub thicket, Short graminoid - forb emergent marsh/mud flat

- Some of New Hampshire’s most pristine coastal island habitat exists on the Isles of Shoals, particularly on Seavey Island, which is being managed for endangered species nesting habitat.
- The most challenging issues facing coastal island habitat and seabird communities are over-population and introduced predators.

General Information and Resource Considerations: Use exclusion, invasive plant control, and shoreline erosion are potential project areas for WHIP assistance.



Dunes

Definition: Dunes are small hills which are created by wind blown sand deposits from nearby beaches. Salt tolerant beach grasses inhabit these nutrient poor landscapes which are susceptible to erosion.

Important Wildlife: horned lark, least tern, piping plover, semipalmated sandpiper, migrating/wintering birds

Natural Communities: Bayberry - beach plum maritime shrubland, Beach grass grassland, Coastal interdunal marsh/swale, Coastal shoreline strand/swale, Maritime wooded dune

- The most challenging issues facing dune habitat are recreational activities, oil spills, and rising sea level resulting from climate change. Dunes are one of the most at-risk habitats in New Hampshire.

General Information and Resource Considerations: At approximately 27 acres, dunes are the rarest habitat in New Hampshire and are located exclusively in Rockingham County. Development pressures, invasive plants, and recreation pose major problems for this habitat. Some isolated dunes exist near small beaches and coves and require special consideration. Reducing invasive species and establishing dune grasses are common restoration practices. Use exclusion and fencing are important to keep people and cats from disturbing this fragile ecosystem.



Pine Barrens

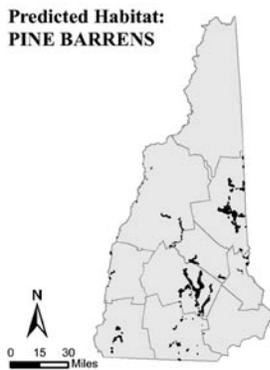
Definition: Plant communities that occur on droughty or excessively well drained soils, sand plain deposits, or dry till habitats. They are characterized by Pitch Pine, Scrub Oak and low heaths. There are several variants in New Hampshire.

Important Wildlife: barrens xylotype, black racer, broad-lined catopyrrha, common nighthawk, cora moth, Eastern box turtle, Eastern hognose snake, Eastern towhee, Fowler's toad, frosted elfin butterfly, Karner blue butterfly, New England cottontail, persius duskywing, phyllira tiger moth, pine barrens zanclognatha moth, pine pinion moth, sleepy duskywing, smooth green snake, whip-poor-will, white-tailed deer*, barrens itame

**Big game species addressed in Big Game Plan Management Plan*

Natural Communities: Dry Appalachian oak - hickory forest, Dry red oak - white pine forest, Dry river bluff, Mixed pine - red oak woodland, Pitch pine - Appalachian oak - heath forest, Pitch pine - scrub oak woodland, Red pine - white pine - balsam fir forest

General Information and Resource Considerations: Several threatened and endangered species are found exclusively in pine barrens. The New Hampshire State Technical Committee has named pine barrens as one of two priority ecosystems in the state. NH Fish and Game has identified and mapped existing and potential pine barren restoration sites. This is a fire dependent ecosystem, and specialized training is required for NRCS staff to recommend prescribed burning as a conservation plan component. Brush management and invasive species control are potential areas where WHIP program assistance can be utilized. GPS/GIS technology can be used to map invasive populations and may help reduce their spread during management activities such as brush hogging or timber stand improvement. Forest stand improvement can be accomplished by girdling or removing competing tree species, such as white pine, but should be prescribed on a case-by-case basis. Restoration of gravel pits into xeric forests, grasslands and pine barrens are suitable projects for WHIP. Because pitch pine and other xeric species can inhabit shallow soils with high coarse fragment contents, these areas can also be considered for restoration but may be a lower priority for WHIP assistance due to the lack of documentation on threatened, endangered and candidate species that may inhabit them.



Rocky Ridges and Talus Slopes

Rocky Ridge Definition: Forested habitat on hilltops and lower mountain elevations with 25 – 50% exposed bedrock and open glade habitats. Fire history is common in this habitat.

Talus Slopes Definition: A sloping mass of coarse rock debris accumulated at the foot of a cliff or slope. Debris is mostly large rocks with little or no soil accumulation or vascular plant cover.

Important Wildlife: black bear*, black racer, bobcat, common nighthawk, timber rattlesnake

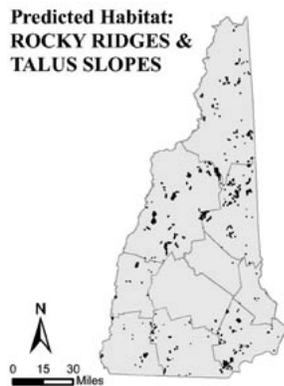
**Big game species addressed in Big Game Plan Management Plan*

Natural Communities: Appalachian oak - pine rocky ridge, Chestnut oak forest/woodland, Dry Appalachian oak - hickory forest, Jack pine rocky ridge woodland, Montane acidic cliff, Montane heath woodland, Red oak - ironwood - Pennsylvania sedge woodland, Red pine rocky ridge, Red spruce - heath - cinquefoil rocky ridge, Alpine/subalpine pond, Chestnut oak forest/woodland, Montane landslide, Montane lichen talus barren, Red oak - black birch wooded talus, Red oak - hickory wooded talus, Red oak - hickory wooded talus, Red oak - ironwood - Pennsylvania sedge

woodland, Rich Appalachian oak rocky woods, Rich mesic forest, Rich red oak rocky woods, Semi-rich Appalachian oak - sugar maple forest, Semi-rich mesic sugar maple forest, Spruce - birch - mountain maple wooded talus, Subalpine cold-air talus barren, Temperate lichen talus barren

- The most challenging issues facing rocky ridges and talus slopes are hiking and climbing.

General Information and Resource Considerations: Most of these habitats are located in the northern counties of the state and are associated with steep topography and may contain rare plant species. Hiking, climbing, and off road vehicles pose the greatest threat to these habitats. Improving adjacent habitats by controlling invasive species and encouraging management as young forest, grassland, and shrubland are suitable recommendations for habitat improvement.



Floodplain Forest

Definition: Forests on river terraces which are periodically or commonly flooded by rivers and streams. These soils are typically fertile, have high erosion rates, and support many species of wildlife, including vegetation such as Silver maple.

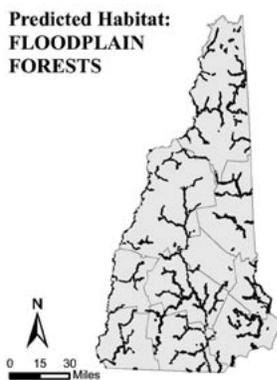
Important Wildlife: American woodcock, Blanding's turtle, cerulean warbler, Cooper's hawk, Eastern red bat, Jefferson salamander, mink frog, migrating/wintering birds, Northern leopard frog, red shouldered hawk, ribbon snake, silver-haired bat, spotted turtle, veery, white-tailed deer,* wood thrush, wood turtle, Canada warbler

**Big game species addressed in Big Game Plan Management Plan*

Natural Communities: Alder - dogwood - arrowwood alluvial thicket, Alder alluvial shrubland, Alluvial mixed shrub thicket, Aquatic bed, Balsam fir floodplain/silt plain, Basswood - white ash - black maple floodplain forest, Blue-joint - goldenrod - virgin's bower riverbank/floodplain, Herbaceous riverbank/floodplain, Herbaceous/wooded riverbank/floodplain, Meadowsweet alluvial thicket, Oxbow buttonbush swamp, Oxbow marsh, Red maple floodplain forest, Riverbank/floodplain fern glade, Silver maple - false nettle - sensitive fern floodplain forest, Silver maple - wood nettle - ostrich fern floodplain forest, Sugar maple - ironwood - short husk floodplain forest, Sugar maple - silver maple - white ash floodplain forest, Swamp white oak floodplain forest, Sycamore floodplain forest

- The most challenging issues facing floodplain forests are human development, transportation infrastructure, altered hydrology from dams, and invasive exotic plants.

General Information and Resource Considerations: NH Fish and Game has developed a floodplain forest map which provides locations and potential restoration sites and evaluates the condition of each mapped location. Flooding frequency has been reduced on many floodplains due to damming, adversely impacting the habitat for flood dependent species such as Silver Maple. Silver Maple sites have been established as a high priority for restoration and management. Using native plants to stabilize eroding stream banks, creating buffer zones, and removing fill associated with woods roads and trails are suitable restoration techniques that could be implemented under the WHIP program. Many agricultural fields border or are located on floodplains. Due to fertile soil conditions, invasive plants are a concern. Controlling invasive species may be difficult on some floodplains. Reducing populations of invasive species adjacent to high quality floodplains has been addressed as a priority for WHIP assistance. Special consideration should be given to threatened and endangered species that are documented in the area.



Marsh and Shrub Wetlands

Definition: Wetlands containing very poorly drained soils with a mucky surface which are too wet to support climax forest communities. Other non-climax communities of shrub wetlands require management to suppress forest succession.

Important Wildlife: American bittern, American black duck, American woodcock, banded sunfish, blue-spotted salamander, common moorhen, Eastern red bat, Fowler's toad, golden-winged warbler, great blue heron, Jefferson salamander, least bittern, mink frog, moose*, New England cottontail, migrating/wintering birds, Northern harrier, Northern leopard frog, osprey, pied-billed grebe, red shouldered hawk, ribbon snake, ringed boghaunter, rusty blackbird, sedge wren, silver-haired bat, smooth green snake, spotted turtle, Blanding's turtle

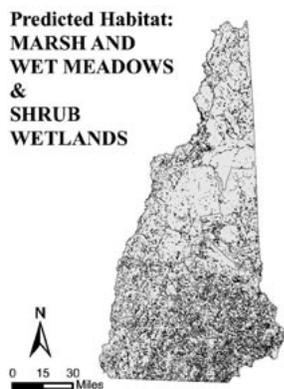
**Big game species addressed in Big Game Plan Management Plan*

Natural Communities: Alder - dogwood - arrowwood alluvial thicket, Alder alluvial shrubland, Alluvial mixed shrub thicket, Aquatic bed, Bulblet umbrella-sedge open sandy pond shore, Buttonbush basin swamp, Cattail marsh, Deep emergent marsh - aquatic bed, Herbaceous seepage marsh, Highbush blueberry - winterberry shrub thicket, Hudsonia inland beach strand, Meadow beauty sand plain marsh, Meadowsweet - robust graminoid sand plain marsh, Meadowsweet alluvial thicket, Medium-depth emergent marsh, Mixed tall graminoid - scrub-shrub marsh, Montane sandy basin marsh, Northern medium sedge meadow marsh, Peaty marsh, Pitch pine - heath swamp, Red maple -

Sphagnum basin swamp, Seasonally flooded boreal swamp, Seasonally flooded red maple swamp, Sharp-flowered manna-grass shallow peat marsh, Short graminoid - forb emergent marsh/mud flat, Spike-rush - floating-leaved aquatic mud flat, Swamp white oak basin swamp, Sweet gale - speckled alder shrub thicket, Tall graminoid emergent marsh, Three-way sedge - manna-grass mud flat marsh, Twig-rush sandy turf pond shore, Water lobelia aquatic sandy pond shore

- The most challenging issues facing many wildlife species that depend on marsh and shrub wetlands are fragmentation, transportation infrastructure, development of surrounding uplands and invasive species.

General Information and Resource Considerations: Marshes and shrublands that occur in very poorly drained soils can be in a climax state and may not require management to sustain them. Other systems will require periodic management to sustain their characteristics. These ecosystems are prime wildlife habitat. Aerial photo interpretation, soil maps, and the NHWAP GIS data layer are useful tools for determining acreage and developing potential restoration projects. Restoration techniques include plugging ditches, removing tile drains, replacing undersized culverts, and removing fill associated with road and railroad beds. Invasive species can displace rare plant communities and lower food source diversity in the ecosystem. Proper maintenance of ATV and snowmobile trails can reduce the spread of invasive species and minimize sediment delivery to adjacent wetlands.



Peatlands

Definition: Peatlands are the result of organic matter build up in anaerobic environments. These landscapes are saturated for most or all of the year. Ponding and flooding are common and these soils vary in their ability to support trees.

Important Wildlife: Blanding's turtle, Eastern towhee, mink frog, Northern bog lemming, palm warbler, ribbon snake, ringed boghaunter, rusty blackbird, spotted turtle, spruce grouse

Natural Communities: Acidic northern white cedar swamp, Atlantic white cedar - giant rhododendron swamp, Atlantic white cedar - yellow birch - pepperbush swamp, Atlantic white cedar swamp, Black gum - red maple basin swamp, Black spruce - larch swamp, Calcareous sedge - moss fen, Hemlock - cinnamon fern forest, Highbush blueberry - mountain holly wooded fen, Highbush blueberry - winterberry shrub thicket, Inland Atlantic white cedar swamp, Northern hardwood - black ash - conifer swamp, Northern white cedar - balsam fir swamp, Northern white cedar - hemlock swamp, Northern white cedar swamp, Pitch pine - heath swamp, Red maple - red oak - cinnamon fern forest, Red maple - sensitive fern swamp, Red maple - Sphagnum basin swamp, Red maple -

Sphagnum basin swamp, Red spruce swamp, Seasonally flooded Atlantic white cedar swamp, Seasonally flooded red maple swamp, Speckled alder wooded fen, Swamp white oak basin swamp, Sweet pepperbush wooded fen, Winterberry - cinnamon fern wooded fen, Bog rosemary - sweet gale - sedge fen, Calcareous sedge - moss fen, Circumneutral - calcareous flark, Floating marshy peat mat, Hairy-fruited sedge - sweet gale fen, Highbush blueberry - sweet gale - meadowsweet shrub thicket, Large cranberry - short sedge moss lawn, Leather-leaf - black spruce bog, Leather-leaf - sheep laurel dwarf shrub bog, Liverwort/horned bladderwort mud-bottom, Marshy moat, Montane alder - heath shrub thicket, Montane heath woodland, Montane sloping fen, Northern white cedar circumneutral string, Speckled alder - lake sedge intermediate fen, Speckled alder wooded fen, Sphagnum rubellum - small cranberry moss carpet, Subalpine sliding fen, Sweet gale - meadowsweet - tussock sedge fen, Sweet pepperbush wooded fen, Water willow - Sphagnum lagg, Water willow - Sphagnum lagg, Wet alpine/subalpine bog, Winterberry - cinnamon fern wooded fen, Wooded subalpine bog/heath snowbank

- The most challenging issues facing peatlands habitat are development, altered hydrology, non-point source pollutants, and unsustainable forest harvesting practices.

General Information and Resource Considerations: Peatlands can support trees, grasses and/or shrubs. Trees typically grow on shallower (<1 meter) more decomposed sparcic type peat while shrubs and grasses inhabit deeper (1.5-5 meters) peatlands with less decomposed hemic type peat. Ground penetrating radar (GPR) is a useful tool for determining depth and assessing the hydrology of peatlands. Beaver activity is common in peatlands. Gravel road beds which bisect larger peatlands often obstruct hydrology and change conditions which are vital to indigenous vegetation. Atlantic White Cedar swamps, a recognized natural community, require peatlands and often are in need of brush management to control competing species. Hydrology restoration and invasive species control are suitable practices for WHIP assistance.



Salt Marshes

Definition: Salt marshes are wetlands that are regularly flooded by tidal water. They include areas that are flooded daily and referred to as low-marsh, as well as less frequently flooded areas known as high-marsh. The vegetation is different in both high and the low-marsh. Soils in the marsh are typically have a peat surface and are underlain by sand or clay.

Important Wildlife: American black duck, common tern, great blue heron, Nelson's sharp-tailed sparrow, Northern harrier, salt marsh sharp-tailed sparrow, seaside sparrow, semipalmated sandpiper, white-tailed deer*, willet, migrating/wintering birds

**Big game species addressed in Big Game Plan Management Plan*

Natural Communities: Brackish marsh, Coastal salt pond marsh, Coastal shoreline strand/swale, High brackish tidal riverbank marsh, High salt marsh, Intertidal rocky shore, Low brackish tidal riverbank marsh, Low salt marsh, Saline/brackish intertidal flat, Salt pannes and pools

- The most challenging issues facing salt marshes are human development and altered hydrology.

General Information and Resource Considerations: The hydrology of most New Hampshire salt marshes has been restored by NRCS through the replacement of undersized road culverts. Invasive species remain a threat to these ecosystems. Developing solutions for the eradication of invasive species is a priority in this ecosystem.



Vernal Pools

Definition: Vernal pools are small (approximately 100-5000 square feet) puddle-like depressions in the forest that are ponded in the spring and dry up in the summer months. Water stained leaves and bedrock controlled landscapes are typically associated with vernal pools. They provide essential breeding grounds for many wildlife species.

Important Wildlife: Blanding's turtle, blue-spotted salamander, Jefferson salamander, marbled salamander, ribbon snake, spotted turtle

Natural Communities: Vernal floodplain pool, Vernal woodland pool, Meadow beauty sand plain marsh, Meadowsweet - robust graminoid sand plain marsh, Montane sandy basin marsh, Sharp-flowered manna-grass shallow peat marsh, Spike-rush - floating-leaved aquatic mud flat, Three-way sedge - manna-grass mud flat marsh, Highbush blueberry - winterberry shrub thicket

- Vernal pools occur at scattered locations throughout New Hampshire.
- The proportion of New Hampshire's vernal pools in conservation ownership is unknown.

- Many of the rare species that depend on vernal pools are restricted to southern New Hampshire.
- The most important wildlife values of vernal pools are provision of critical foraging and breeding habitat for a number of reptiles, amphibians, and invertebrates.
- The most challenging issues facing vernal pool habitats are human development and transportation infrastructure, wetland filling, altered hydrology, and loss or degradation of surrounding upland habitats.

General Information and Resource Considerations: To date, vernal pool restoration has not been overly successful. Reducing habitat fragmentation and identifying vernal pools with GIS/GPS are important tools for protecting this ecosystem.

Young Forest and Early Successional Habitats

Definition: Young forest habitat starts 10 to 15 years after a regeneration cut and continues for 40 or 50 years depending on forest type. Regenerating forest and young forest habitat age classes contain the greatest diversity of wildlife species.

Important Wildlife: New England cottontail, American woodcock, American redstart and several other species of migratory songbirds.

General Information and Resource Considerations: Currently, most of New Hampshire's forest can be categorized as even-aged stands between 25 and 100 years in age. Because only a small percent (< 3%) of New Hampshire's forest could be described as young or early successional, this habitat type is in demand among many species. Small patch cuts are ways to improve habitat diversity within an even-aged stand. Patch cuts in the order of 1-5 acres or more can improve habitat diversity. Patch cuts must be a minimum of 1 acre in size to provide suitable forage and at least 5 acres in size to provide suitable breeding bird habitat. This type of habitat diversification can help improve adjacent habitats such as cliffs or talus slopes. To protect stands of old growth forest, stands at 100 years or older should not be considered for early successional management. Also, at 100 years in age these forests may already have several of the attributes of older growth forests such as forest structure and biodiversity. Priority should be given to restore, protect, enhance or enlarge areas of young forest in non-fragmented forest areas.

Invasive Species

Definition: Invasive species are plants which are non-native to New Hampshire's landscape and have the ability to displace native species by their fast growing and aggressive nature. Invasive species reduce the variety of food sources and are a serious threat to an ecosystems' biodiversity and habitat quality. A list of invasive plant and animal species can be found at http://www.nh.gov/agric/divisions/plant_industry/documents/Webpage_introduction.pdf

General Information and Resource Considerations: Invasive species are a problem in virtually every habitat type in the state. In some areas controlling invasive species may have low potential success rates because of large seed reserves in the soil, extensive root systems, exceedingly high cost, poor response to herbicides, or the unwillingness of land owners to use herbicides as a method of control. Former agricultural lands and disturbed areas are prime locations for colonization by invasive plants. GIS mapping from GPS point and track data can be used to identify the location and size of invasive plant communities. This data is essential in reducing the spread of invasive species from roads, trails, forestry operations, and other disturbance-related activities. Commercial herbicide applications on public and private land and the use of restricted herbicides must be performed by a NH licensed applicator. Landowners can apply non-restricted herbicides to their own lands without a license. Priority will be given to those WHIP applications which address the control of invasive species in habitats that contain or could support threatened, endangered, or candidate species.

Subaqueous Habitats and Estuary

Definition: Subaqueous habitats are permanently submerged and at the correct depths for a particular species, such as eelgrass which requires water depths of 3-8 feet.

Definition: Estuary habitats are typically shallow, low-energy environments with various water salinities and include tidal and inter-tidal environments.

Important Wildlife: sturgeon, shad, alewives, lampreys, smelt, salmon, lobster, winter flounder, cod, Pollack, eels, hake, bald eagles, common terns, upland sand pipers, marsh hawks, ospreys, and common loons.

General Information and Resource Considerations: The Great Bay estuary and Hampton Harbor provide critical habitat for several threatened and endangered birds and fish. Eelgrass, a critical habitat for fin fish and other shellfish, has suffered a drastic decline due to the effects of disease, dredging, mooring fields, and docks. Over harvesting and disease also account for much of the decline in the states oyster population. Agricultural and urban environments adjacent to estuaries pose threats from sedimentation, excess nutrients, and pollution. Eelgrass and shellfish bed restorations are currently underway with the technical assistance provided by NRCS and the University of New Hampshire Jackson Estuarine Laboratory. These efforts are aimed at restoring historic eelgrass beds and oyster reefs. The control of agricultural runoff, establishment of buffers, and implementation of erosion control measures are suitable practices for WHIP assistance.

V. PARTNERSHIP INVOLVEMENT

New Hampshire NRCS works with a variety of partners to deliver the WHIP program. Due to the complexity of identifying, restoring, and managing wildlife habitat across a wide variety of ecosystems, cooperation between various experts and state organizations is crucial. New Hampshire NRCS will continue to honor the advice and recommendations of our partners and provide natural resources planning, restoration and management

assistance within the scope and vision of our national policies and directives. We encourage our partners to assist us in the development of WHIP projects with high ecological significance and high potential success rates.

Federal Partners

U.S. Fish and Wildlife Service
U.S. Forest Service

State Partners

Department of Environmental Services
New Hampshire Fish and Game
New Hampshire Timberland Owner's Association
Office of Energy and Planning
Plymouth State University
Society for the Protection of New Hampshire Forests
University of New Hampshire Cooperative Extension
University of New Hampshire Department of Natural Resources
University of New Hampshire Jackson Estuarine Laboratory

Other Partners

The Ruffed Grouse Society

VI. 15 YEAR ESSENTIAL PLANT AND ANIMAL HABITAT AGREEMENTS

With input from the STC sub-committee, New Hampshire will allocate up to 15 percent of the annual WHIP funds for applicants who restore and protect essential habitats using an agreement that is 15 years or greater in duration. The cost-share rate will be 90 percent for practices that develop, protect, enhance or restore essential habitats. Any other practice under the 15 years or greater agreement will be cost-shared at the standard rate. A separate ranking process will be used to prioritize all eligible applications.

VII. STATE APPLICATION RANKING PROCESS

By policy, beginning in FY 2007 NRCS will use a national ranking sheet customized to include state concerns (based on recommendations made by the State Technical Committee) to evaluate all WHIP applications. Applications will be ranked based upon ecological significance, likelihood of success, and project cost. The WHIP STC sub-committee has developed clear and direct evaluation criteria which will create a fair and equitable ranking process across the 10 counties of the state. Because of the complexity of wildlife projects, ranking will be determined by the project's ability to implement state and federal WHIP priorities as well as the objectives listed in sections II, III and IV of this document. These priorities are not exclusive and other projects which demonstrate the ability to achieve the desired goals will be considered for funding. A separate customized national ranking sheet will be used to rank 15 year essential plant and animal habitat applications.

VIII. MEASURING PROGRAM SUCCESS

Physical monitoring is currently taking place in several New Hampshire salt marshes whose hydrology was restored through previous WHIP program assistance. New Hampshire NRCS is working to develop partnerships with university researchers and other organizations to scientifically determine the success of our WHIP projects. Because this WHIP plan is closely related to the New Hampshire Fish and Game Wildlife Action Plan, we will be using their monitoring reports and guidance in coming years to measure our successes.

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