PRIORITY WILDLIFE HABITATS

in

MOULTONBOROUGH

NEW HAMPSHIRE

An Addendum
To the
2007 Moultonborough Natural Resources Inventory

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Wildlife Action Plan Summary

The purpose of this Addendum is to aid the Conservation Commission in making decisions and educating landowners about conserving and protecting Wildlife Habitats in Moultonborough. The risks to habitats are many but can be minimized by thoughtful consideration of land use and awareness of Wildlife habits.

Wildlife and Wildlife Habitats are fundamental to the makeup of Moultonborough. The animals, birds, reptiles and the environments that support them are essential to the character of our town.

This Addendum identifies Actions for conserving and protecting Wildlife Habitats. It describes eight High Priority Wildlife Habitats, species that may be found in them and possible impacts to those areas.

Conservation Commission Actions Regarding Wildlife and Wildlife Habitats

To conserve and protect Wildlife and Wildlife Habitats:

1. Develop a plan to acquire easements or ownership of contiguous, non-protected and fragmented land in priority areas that support Wildlife Habitats and Wildlife Corridors.
2. Add maps and descriptions of wildlife habitats and corridor areas to the Conservation Commission web site
3. Educate landowners about maintaining wildlife corridors
4. Educate landowners on how to promote wildlife habitats
5. Encourage landowners to place prime wildlife corridor and habitat areas into conservation protection
6. Request that town employees include location coordinates on wildlife road-kill reports
7. Verify/add road caution signs in areas with clusters of wildlife road-kill.

Addendum to Natural Resources Inventory of 2007

Purpose of Addendum

The following information on wildlife and wildlife habitats is added to the Moultonborough 2007 Natural Resource Inventory as an Addendum. The updated December 2008 Moultonborough Master Plan includes a goal to provide protection for Wildlife Habitats.

Moultonborough Master Plan Water, Natural and Environmental Resources Goal #3.
The Action Items of Goal #3 are:

1. Identify impacts to wildlife habitat as a result of different types of land use
2. Identify wildlife corridors and take actions to maintain connectivity
    a. Conservation easements purchased/given to town
    b. Incentive programs with conservation awards

To meet this goal the Moultonborough Conservation Commission has followed the following process with the guidance of consultants from the Take Action for Wildlife program offered by NH Fish & Game and UNH Cooperative Extension.

- Reviewed and prioritized the high priority conservation areas listed in the 2007 NRI.
- Developed descriptions of the areas, a listing of wildlife that is likely to be found in those habitat areas, impacts on the areas and other information.
- Organized the information into sections.
- Identified wildlife corridors through review of road kill data

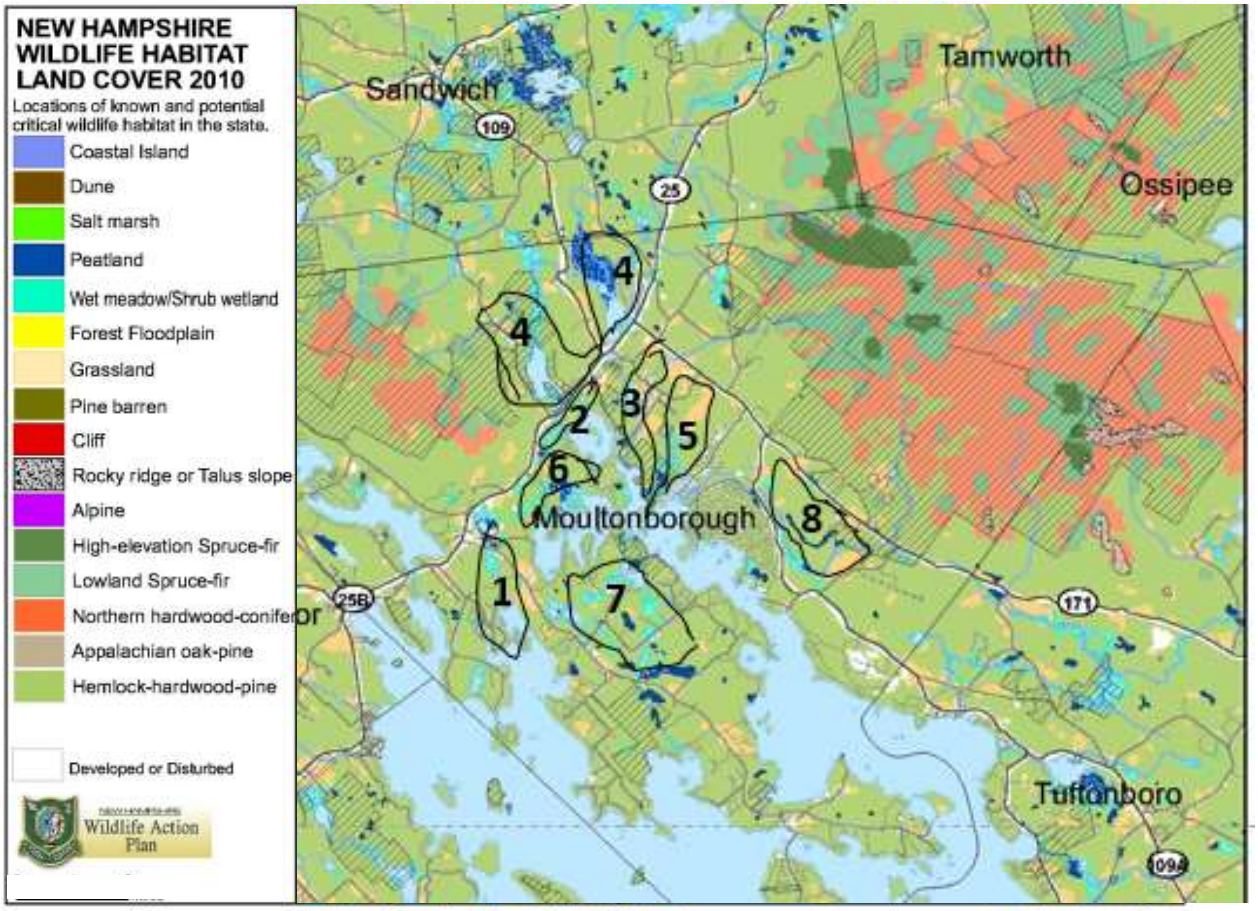
Future actions to protect habitats and corridors

- Present the information to the Moultonborough Board of Selectmen, Zoning and Planning Boards and the community to increase an awareness of Moultonborough's wildlife resources and an interest in protecting them.
- Provide information to landowners that will promote the conservation of Wildlife Habitats and Corridors.
- Identify and recognize those landowners who support wildlife habitats and corridors.
- Encourage property owners in priority areas, where relevant, to apply for conservation easements.
- Draft a plan with strategies and proposed actions for protecting the habitats in Moultonborough, especially those in the Priority Areas

High Priority Wildlife Habitats in Moultonborough

The Conservation Commission identified eight High Priority Conservation Areas for Wildlife Habitats in Moultonborough These 8 areas, with the addition of 2 other areas (Balmoral and Lovell River), were identified as priority conservation areas in the 2007 National Resources Inventory.[1]

1. Mud Pond/Salmon Meadow Cove
2. Lees Pond
3. Halfway Brook
4. Garland Pond/Berry Pond
5. Balmoral/Whaleback
6. Moultonborough Bay
7. Moultonborough Neck
8. Shannon Brook



[1]National Resource Inventory - Town of Moultonborough, p.16.

Description of Priority Area Habitats, List of Species that May be Found in this Habitat and Impacts to Habitats[2]
(A description of each type of habitat may be found a glossary at the end of this section.)

1. Mud Pond/Salmon Meadow Cove

Description of Habitat

This habitat area is made up of 142 acres and is in the western section of town south of Route 25 on both sides of Moultonborough Neck Road up to Salmon Meadow Cove. There is open water with a perennial stream and about 40% of the area is Open Wetlands; Marsh and Shrub Wetland and Peatland. There are Hay and Grasslands in areas near Moultonborough Neck Road and White and Red Pine in the south/east near the lake. An aquifer is located below this habitat.

The highest ranked habitat area in this section is along the shore of Salmon Meadow Cove. Open wetland is the largest land cover type for this habitat and none is protected as conservation land. This is a top priority area for conservation. (Descriptions of habitats may be found in the Glossary.)

Species that May be Found

Species that may be found in this area are black bear, moose, white tailed deer, wild turkey, migrating/wintering birds, bald eagle, wood turtle spotted turtle, great blue heron, bobcat, rabbit, blue spotted salamander, fisher cat, red and silver fox, mountain lion, skunk, hawk, raccoon, and weasel.

Wildlife Corridor

Moultonborough Neck Road intersects the Highway Garage Drive and Greens Basin Road within this area. The stream from Mud Pond into Salmon Meadow Cove in Lake Winnipesaukee, flows under the road here and is a likely wildlife route.

The road kill analysis shows that Mud Pond and nearby area is a likely destination for wildlife.

Impacts to Habitats

Impacts may be from materials stored at the town shed used for road maintenance. They may leach into the water table as the town shed property abuts Mud Pond. Chemical treatment of and drainage from town playing fields and salt runoff from Moultonborough Neck Road may also impact this habitat.

2. Lees Pond

Description of Habitat

There are 76.9 acres in this habitat which is located northwest of Lees Pond and south east of Route 25. Water flows from Garland Pond under Route 25 into Lees Pond near the intersection

[2] http://extension.unh.edu/Wildlife/Wildlife.htm, National Resource Inventory - Town of Moultonborough

of Sheridan Road. There is open water with Beech and Oak scattered within this habitat. Wetlands, Marsh and Shrub Wetlands north of Lees Pond make up approximately 50 % of this area. Peatlands, an aquifer, and wetlands greater than 5 acres are found here. None of the unfragmented land is protected. Lees Pond is a top priority for conservation. (Descriptions of habitats may be found in the Glossary.)

Species that May be Found

Species that may be found in this area are black bear, moose, white tailed deer, wild turkey, migrating/wintering birds, bald eagle, wood turtle, common loon, great blue heron, and Blanding's turtle. The highest ranked habitat is around the shores of Lees Pond.

Wildlife Corridor

Wildlife is active along a stretch of Route 25 between Glidden Road, near Lake Kanasatka, eastward to Sheridan Road, where Route 25 crosses the stream that connects Garland Pond with Lees Pond. This is an area of continuous wildlife movement, but there are notable clusters within this stretch. The most significant area is from Lake Kanasatka where it touches Route 25 east to the intersection of Moultonborough Neck Road. There are other clusters at Saw Mill Road, where Red Hill Road intersects Route 25, Fox Hollow Road, and near Sheridan Road. This is a well-traveled auto route, with many businesses and connector roads. Motorists should be alert for wildlife crossings from Glidden Rd east to Sheridan Road and after Garland Pond Road for those headed west.

Impacts to Habitats

Habitats may be impacted by stormwater runoff from Route 25, milfoil and development along the shore and between the wetland areas.

3. Halfway Brook

Description of Habitat

There are 323.9 acres in this habitat which is located south of Routes 25 and 109. Halfway Brook runs from the Ossipee Mountains under Route 171 to enter Lake Winnipesaukee at the upper end of Moultonborough Bay. Lees Pond also empties into the lake in this locale. There is open water and a 20% mixed forest east and west of the area. Beech and Oak are found near Route 109 as well as Red and White pine. There are Hay and Grassland areas on both sides of Halfway Brook near Route 109, Wetlands off Orchard Drive and some cleared areas on both sides of the brook in the north and east section near Route 109.

Less than 1% of this habitat's unfragmented land is protected conservation land. Highest ranked habitat areas are along both sides of the stream. (Descriptions of habitats may be found in the Glossary.)

Species that May be Found
Species that may be found in this area are black bear, moose, white tailed deer, wild turkey, migrating/wintering birds, bald eagle, wood turtle, grey and red fox, rabbit, coyote fisher cat, geese and loons.

Impacts to Habitats
Habitats are impacted by commercial and residential development along Route 109 and residential development in Balmoral.

4. Garland Pond/Berry Pond
Description of Habitat
This habitat has two distinct areas. Berry Pond is along the north side of Route 25 where it intersects with Route 171 and Garland Pond is north of Route 25 where it intersects with Sheridan Road. Berry Pond is east of Moultonborough village and Garland Pond is west of the village.

Highest ranked habitats are along shores of both ponds, where the biological region supports wildlife. It is one of the largest and most diverse areas within the town. Approximately 63% of the area consists of open water with wetlands greater than 5 acres, an aquifer, and riparian corridors. Habitats that are found are Peatlands, Wet meadow, Shrub wetland, and Hemlock and Hardwood forests.

Garland Pond/Berry Pond provide flood protection and water quality protection. About 13.4% of the area is protected as conservation land. It is a top priority area for conservation. (Descriptions of habitats may be found in the Glossary.)

Species that May be Found
Black bear, moose, white tailed deer, wild turkey, migrating/wintering birds, bald eagle, wood turtle, Blanding's turtle, spotted turtle, great blue heron, bobcat, purple finch, blue spotted salamander, Canadian geese, loon. The area has 2 documented locations of threatened and endangered species.

Wildlife Corridor
A wildlife corridor is located along Route 25; from the intersection with route 109, east along the airport runway to Evens Road then tapering off to the town line with Sandwich. This cluster also extends for the first mile down route 109 where Halfway Brook crosses the road. It should be noted that there are smaller clusters all along Route 109 at the intersection with Route 171, and the entrance to Ossipee Park Road.

Impacts to Habitats
Route 25 with development and stormwater runoff impacts Garland and Berry Ponds. Route 25 hinders wildlife movement.

5. Balmoral/Whaleback

Description of Habitat

This area is composed of 717.3 acres located south of Route 109 and in Moultonborough Bay. The highest ranked habitats are around the island and west of the Balmoral development. The types of habitats found here are small clumps of Spruce and Fir in the east central section, Red and White Pine in small clumps adjacent to Balmoral and Suissevale, Beech and Oak in the north near Route 109 and in the south and east. There are Hay and Grasslands near Route 109 and adjacent to Lees Mill Road. Wetlands are scattered in the middle of the area and in the south and east adjacent to the lake. (Descriptions of habitats may be found in the Glossary.)

Species that May be Found

Black bear, moose, white tailed deer, wild turkey, migrating/wintering birds, bald eagle, wood turtle, American woodcock, purple martin, spotted turtle, loons, otter, mergansers, raccoon, porcupine, mink and fox.

Impacts to Habitats

A golf course, high density development and stormwater runoff from paved roads impact this area.

6. Moultonborough Bay

Description of Habitat

There are 120.2 acres in this habitat which is located south of the Lees Pond Priority Area, east of Route 25 and west of Moultonborough Bay. Halfway and Shannon Brooks on the east side and Meadow Brook on the west empty into the bay. It is an open and forested habitat. The highest ranked habitats are along the shores of the bay.

Peatlands, Wetlands, Marsh and Shrub wetlands cover about 60% of this area. Hay and Grasslands are located in the northern part of this habitat and small clumps of Beech, Oak, and Red and White Pine grow near the lake's edge.

This habitat has wetlands greater than 5 acres and an aquifer. None of the unfragmented land is protected.

The highest ranked habitat area is along the shore and in the supporting landscape up from the waterline. (Descriptions of habitats may be found in the Glossary.)

Species that May be Found

Species that may be found in this area are moose, white tailed deer, fox, black bear, bobcat, wild turkey, migrating/wintering birds, wood turtle, purple martin, Blanding's turtle, and loons.

Impacts to Habitats

Impacts to the habitat are milfoil along the lake edge, stormwater runoff, and dense development along the eastern side of the lower bay.

7. Moultonborough Neck

This habitat includes 345.5 acres and is located south of Moultonborough Bay Priority Area and north of Moultonborough Neck Road. The highest ranked habitat areas are along the shores of Moultonborough Bay, along Meadow Brook and north of Hanson Mill Road.
Wetlands, Marsh and Shrub wetlands and Forested wetlands cover approximately 60 % of this area. Small clumps of Beech and Oak can be found in the eastern and western parts of this habitat and small clumps of Red and White Pine in the eastern section. There are Peatlands, and Hay and Grasslands adjacent to roads.

This is a wellhead protection area and the habitat has wetlands greater than 5 acres, an aquifer, and riparian corridors associated with 2 perennial streams. Of the unfragmented land approximately 6.8% is protected conservation land. (Descriptions of habitats may be found in the Glossary.)

Species that May be Found

Species that may be found in this area are black bear, moose, white tailed deer, wild turkey, migrating/wintering birds, bald eagle, wood turtle, spotted turtle, great blue heron, bobcat, wolf fox, and Blanding's turtle.

Impacts to Habitats

There is a high percentage of commercial and residential development.

8. Shannon Brook

Description of Habitat

This habitat is made up of 339.7 acres located east of Route 109 and south of Route 171 following a portion of Shannon Brook. Adjacent to the eastern section of Shannon Brook are Wetlands and Marsh and Shrub wetlands. There are Peatlands, Hay and Grasslands in the south and east part of this habitat and Spruce, Fir, Beech and Oak scattered throughout the area. Paper Birch and Aspen are in the south and west section of the habitat.

This habitat includes an aquifer and riparian corridors. Of the unfragmented land, 4.4% is protected. (Descriptions of habitats may be found in the Glossary.)

Species that May be Found

Species that may be found in this area are black bear, moose, white tailed deer, wild turkey, migrating/wintering birds, bald eagle, wood turtle, bobolink, and Eastern meadowlark.

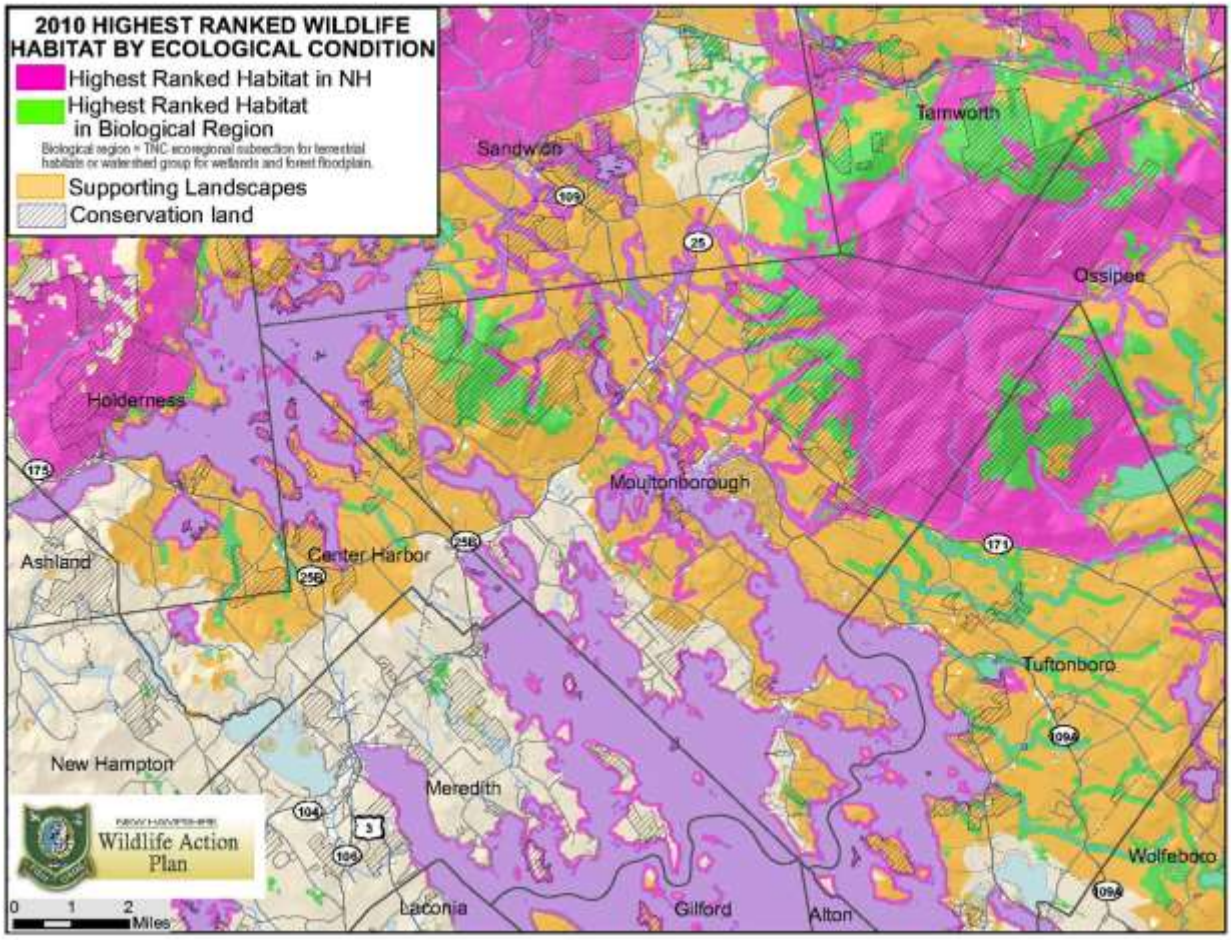
Wildlife Corridor

Shannon Brook crosses Route 171 at Severance Road and Route 109 at States Landing Road and is likely a major wildlife corridor between the Ossipee Mountains, the low and wetland fields and the lake.

Impacts to Habitats

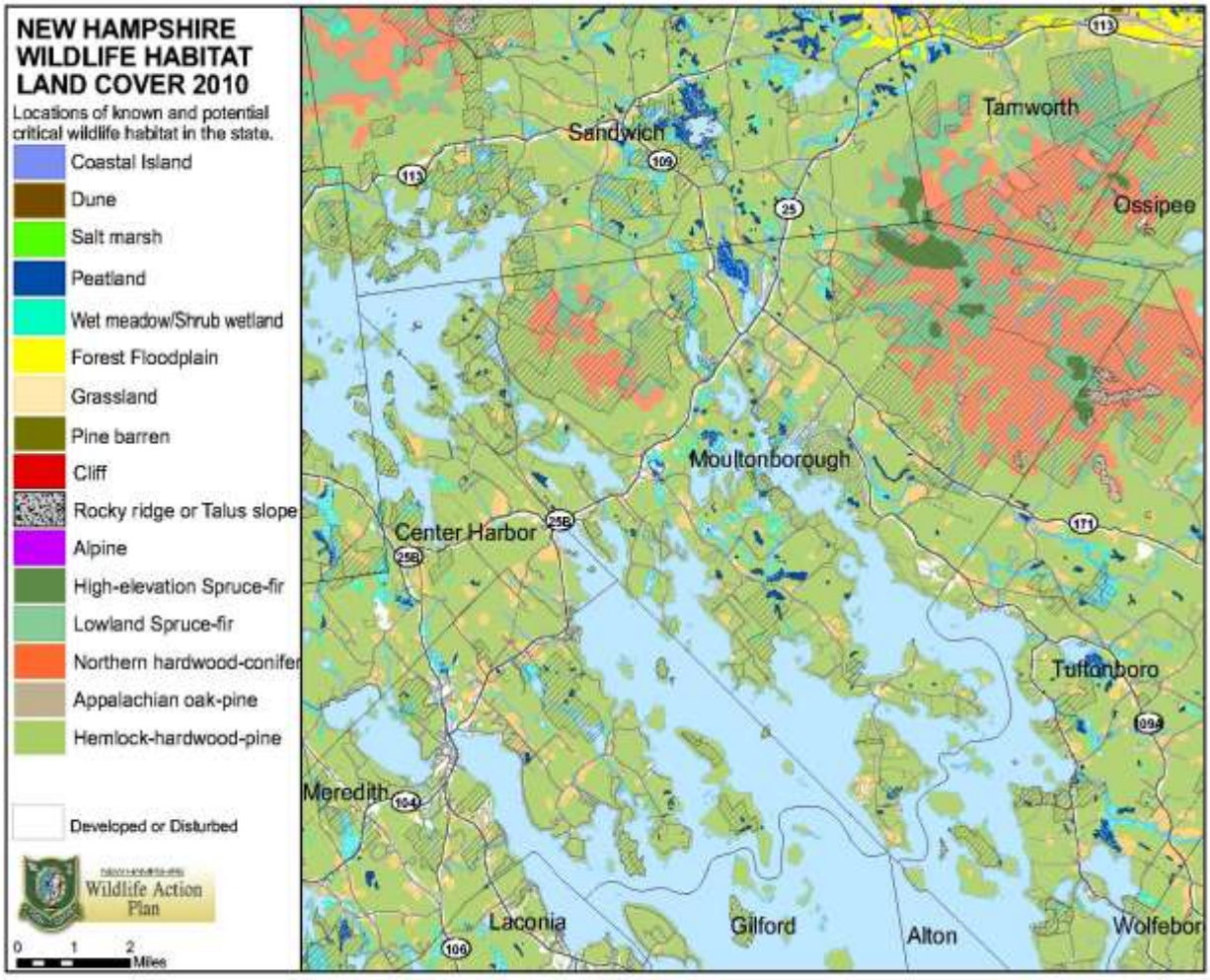
There is a high residential area, Balmoral and Suissville, near the outflow of Shannon Brook into the lake.

Habitat Ranking by Ecological Condition[3]



[3] http://extension.unh.edu/Wildlife/Wildlife.htm

Wildlife Habitat Land Cover Types in Moultonborough[4]



[4] http://extension.unh.edu/Wildlife/Wildlife.htm

Summary of High Priority Wildlife Habitats and Water Resources in Moultonborough 2013			
Priority Area	**Highest Ranked Habitats Predicted Species**	**High Priority Position**	**Water Resources**
1. Mud Pond/Salmon Meadow Cove	Highest ranked habitat along the shore of Salmon Meadow Cove Species that may be found in this habitat: Black bear, Moose White tailed deer, Wild turkey, Migrating/wintering birds, Bald eagle, Wood turtle, Spotted turtle, Great blue heron, Bobcat, Rabbits, Blue spotted salamander, Fisher cat, Red and Silver Fox Mountain lion, Skunk, Hawk, Raccoon, Weasel, Fox	Open wetland is the largest land cover type and none is protected as conservation land, unfragmented land. Top priority area for conservation	Wetlands greater than 5 acres, aquifer
2. Lee's Pond	Highest ranked habitat along the shore, supporting landscape up from water line. Species that may be found in this habitat: Black bear, Moose White tailed deer, Wild turkey, Migrating/wintering birds, Bald eagle, Wood turtle, Common loon, Great blue heron, Blanding's turtle, Spotted turtle, Beaver	Unfragmented land, 0 % of the land is protected. Top priority area for conservation	Wetlands greater than 5 acres, aquifer
3. Halfway Brook	Highest ranked habitat along banks of Halfway Brook. Species that may be found in this habitat: Black bear, Moose White tailed deer, Wild turkey, Migrating/wintering birds, Bald eagle, Wood turtle, Grey and Red Fox, Rabbits, Coyote, Fisher cat	Unfragmented land Less than 1% is protected as conservation land. Halfway Brook empties into lake Winnipesaukee at upper Moultonborough Bay	Stratified drift aquifer, wetlands greater than 5 acres, riparian corridor

4. Garland Pond/Berry Pond	Highest ranked habitat along shores of both ponds, biological region supports wildlife. Species that may be found in this habitat: Black bear, Moose White tailed deer, Wild turkey, Migrating/wintering birds, Bald eagle, Wood turtle, Blanding's turtle, Spotted turtle, Great blue heron, Bobcat, Purple finch, Blue-spotted salamander	The largest and most diverse areas within the town. Approximately 63% of the area consists of open water. The area has 2 documented locations of threatened and endangered species. Areas provide flood protection and water quality protection. About 13.4% is protected as conservation land. Top priority area for conservation	Wetlands greater than 5 acres, aquifer, riparian corridors.
5. Balmoral/ Whaleback	Whaleback has highest ranking habitat. Highest ranking area is along Shannon Brook Supporting ranking inland from Balmoral Highest ranking abuts 2 sides of Balmoral. Species that may be found in this habitat: Black bear, Moose White tailed deer, Wild turkey, Migrating/wintering birds, Bald eagle, Wood turtle, American woodcock, Purple martin, Spotted turtle, Loons, Otter, Mergansers, Raccoon, Porcupine, Mink, Fox	About 14% of the southern portion is protected by existing conservation through the Goodwin lot and the Marcus Wildlife Sanctuary	Wellhead protection areas, riparian corridors, wetlands greater than 5 acres, aquifer, unfragmented lands
6. Moultonborough Bay	Highest ranked habitat along the shore, supporting landscape up from water line. Species that may be found in this habitat: Moose, White tailed deer, Fox, Wild turkeys, Black bear, Bobcat, Migrating/wintering birds, Wood turtle, Purple martin, Blanding's turtle	Unfragmented land, 0% protected	Wetlands greater than 5 acres, aquifer

7. Moultonborough Neck	Highest ranked habitat along the shore line, supporting landscape up from water line on north side of the neck. Species that may be found in this habitat: Black bear, Moose White tailed deer, Wild turkey, Migrating/wintering birds, Bald eagle, Wood turtle, Spotted turtle, Blanding's turtle, Great blue heron, Bobcat, Wolf, Fox	Unfragmented land, approximately 6.8% is protected by conservation land	Wellhead protection area, wetlands greater than 5 acres, aquifer, riparian corridors associated with 2 perennial streams
8. Shannon Brook	Highest ranked habitat along banks of brook Species that may be found in this habitat: Black bear, Moose White tailed deer, Wild turkey, Migrating/wintering birds, Bald eagle, Bobolink, Eastern meadowlark	Unfragmented land, 4.4% is protected	Aquifer, riparian corridor

Glossary of Habitats[5]

Types of Wildlife Habitats

Appalachian Oak Pine Forests

Appalachian oak-pine forests occur in southern and central New Hampshire below 900 feet of elevation, or on dry, rocky ridges at higher elevations. Here, the warmer and drier climate promotes tree species adapted to drier soils**.** White pine and oak trees dominate the tree canopy.

The presence of tree species typical of southern (Appalachian) states sets this habitat apart from the more common oak-pine forest type (also called Hemlock-Hardwood-Pine). Look for black, scarlet, chestnut and white oaks, and shagbark and pignut hickories. Black birch, aspen, pitch pine, sassafras, and yellow birch may also be present. Blueberry, black huckleberry, sheep laurel, and Pennsylvania sedge are typical understory plants. In southwest New Hampshire, mountain laurel shrubs can dominate the understory, while along the Connecticut River and in the Seacoast, Appalachian oaks and hickories mix with sugar maple and white ash on richer soils.

Squirrels may play a key role in re-growing (regenerating) oak stands by burying acorns, often under stands of white pine. They also bury pine cones under oak trees. As a result, it is common to find oak in the understory of white pines, and white pine regenerating under oak**.**

Grassland/Hay Fields

Grasslands are comprised of grasses, sedges, and wildflowers with little to no shrubs and trees. The most common grassland habitats are airports, capped landfills, wet meadows, and agricultural fields such as hayfields, pastures and fallow fields. Pre-colonial grasslands in New Hampshire were probably only maintained by beaver and fires started by lightening and Native Americans. The numerous agricultural lands maintained by early European settlers provided ideal habitat for some wildlife species that need grassland habitat. As these agricultural lands were abandoned, these populations began to decline and are now on the state endangered list such as the eastern hognose snake, northern harrier, upland sandpiper and on the state threatened list such as the grasshopper sparrow. Other species also benefit from these open grass fields such as wood turtles and numerous species of butterflies. Development and natural forest succession have reduced grassland habitat in the state. Grasslands require maintenance and must be mowed to prevent them from becoming shrublands or forests. Only 8% of NH grasslands are currently under conservation easements. Reclaiming and maintaining grasslands are two important conservation strategies for grassland habitats. Many grassland and potential grassland habitat are on private land and landowners can help restore and conserve them.

[5] http://Extension.unh.edu/Wildlife/Habitats-New-Hampshire

Hemlock-Harwood-Pine Forest

Hemlock-hardwood-pine forest is the most wide-spread habitat in New Hampshire. Considered the transitional forest habitat between lower elevations of Appalachian oak-pine habitat (<400'), and higher elevations of northern hardwood habitat (>1,500'), Hemlock-hardwood-pine forests cover almost 50% of New Hampshire, most of it south of the white mountains. Hemlock-hardwood-pine forests are comprised of mostly hemlock, white pine, beech, and oak trees. Since this is a transitional forest, it can occur at different elevations and over different types of soil and topography. Therefore the composition of vegetation can be variable. This forest type is the most common in New Hampshire covering nearly 50% of the state. Many of the species that use this habitat type require large blocks of unfragmented forest. Since this forest type is so common, sometimes it is overlooked in conservation efforts.

White pine and eastern hemlock are most often the dominant trees, but these forests are highly variable and contain a mix of trees common in other forest types. In typical hemlock-hardwood-pine forests, you'll also find beech and patches of sugar maple and white ash (on rich sites) and red oak (on drier sites). Under the canopy, look for small trees or shrubs such as witch hazel, maple-leaved viburnum, black birch, black cherry, and ironwood, with starflower and Canada mayflower on the forest floor.

Hemlock-hardwood-pine forests are the habitat that surround and support many smaller and unique habitat types in southern New Hampshire. Most wildlife that require vernal pools, marsh habitat, headwater streams, floodplains, shrublands, grasslands, or peat bogs will also use the surrounding forest to meet their needs for food, cover, or breeding. Hemlock-hardwood-pine forests are common, but shouldn't be taken for granted given the important supporting role they play in the ecosystem.

Marsh and Shrub Wetlands

Marsh and Shrub wetlands include a variety of wetland types, each with different vegetation, but with one thing in common: the soils in them are wet most of the year.

Marsh and shrub wetlands are rich habitats that provide a number of **critical ecosystem functions** such as flood control, pollutant filtration, erosion control, and wildlife habitat. Marshes are important for fish and amphibian breeding and for waterfowl, and they connect people to habitat through hunting, fishing, tourism, and recreation. Shrub wetlands may seem inhospitable to people, but their dense thickets provide reliable cover from predators for many wildlife species.

Marsh & shrub wetlands fit into three groups, identified by their vegetation**:**

> **Wet meadows** are filled with sedges and grasses. Wet meadows may not be flooded all year, but they are wet for long periods during spring and summer. They provide a rich habitat for such critical species as ribbon snake, spotted turtle and northern harrier.
>
> **Marsh habitats** contain plants that grow out of water, but whose roots are wet, such as cattails, pickerelweed, and water lilies. Blanding's turtles, American black duck and red-winged blackbirds rely on marsh habitat for their feeding and lifecycles.
>
> **Shrub wetlands** are thickets of shrubs and young trees growing out of wet soils, and they often flood in the spring. Spotted turtles, Canada warblers, New England cottontail, and American woodcock all use shrub wetlands for food, cover, or breeding habitat.

Threats: Development is a threat to these habitats mostly from driveways and roads that fragment wetlands or change the flow of water. The loss of an upland habitat around a marsh or shrub wetland also increases the amount of pollution and sedimentation threatening the habitat.

Another constant threat to marsh and shrub wetlands is invasive plants that compete with native vegetation.

Northern Hardwood – Conifer Trees

Thousands of acres of northern hardwood-conifer forests grow on well-drained, fertile slopes of hillsides in New Hampshire, typically between 1,500 and 2,500 feet in elevation. Here, sugar maple, American beech, and yellow birch are the dominant tree species, mixed with red maple, white ash, and patches of hemlock at lower elevations, and red spruce and balsam fir at higher elevations.

Striped maple, witch hazel and hobblebush shrubs are typical in the understory of northern hardwood-conifer forests, with wild sarsaparilla, starflower, and blue-bead lily on the forest floor. Our vast expanses of northern hardwood-conifer forests in northern and western New Hampshire are famous for both spring wildflower displays and brilliant fall foliage. The best examples of northern hardwood-conifer forests have patches of large trees in the canopy, young trees in the understory, many standing dead trees (snags), and abundant dead and decaying trees on the ground. Large cavity trees, pockets of wetlands, seeps and interspersed patches of conifers make some areas of northern hardwood-conifer forest especially rich for wildlife.

Peatlands

Peatlands are wetland ecosystems that contain peat, a spongy, organic material formed by partially decayed wetland plants. Typically found in cool climates, peatlands are associated with acidic or stagnant water which is low in oxygen. The water in many peatlands is highly acidic and lacking in nutrients, creating growing conditions for a very distinct group of plants.

Peatlands can be categorized into three groups**:**

Bogs receive very little surface water flow and are among the most acidic peatlands. They are dominated by shrubs such as leatherleaf and bog laurel.

Fens are peatlands associated with moving water, either along a river or lake, or with a stream that flows into or out of the peatland. Fens range from very acidic (where the plants resemble those found in bogs) to mildly acidic, and are dominated by a combination of sedges and shrubs.

Peat swamps are peatlands dominated by trees. There are many different types of these forested wetlands, with black spruce and larch swamps common in the northern part of the state, and red maple swamps more common in central and southern New Hampshire.

Wildlife Corridor Research Results – November 4, 2013 (Original: October 1, 2012)
Author: Bill Gassman Conservation Commission; Town of Moultonborough, NH

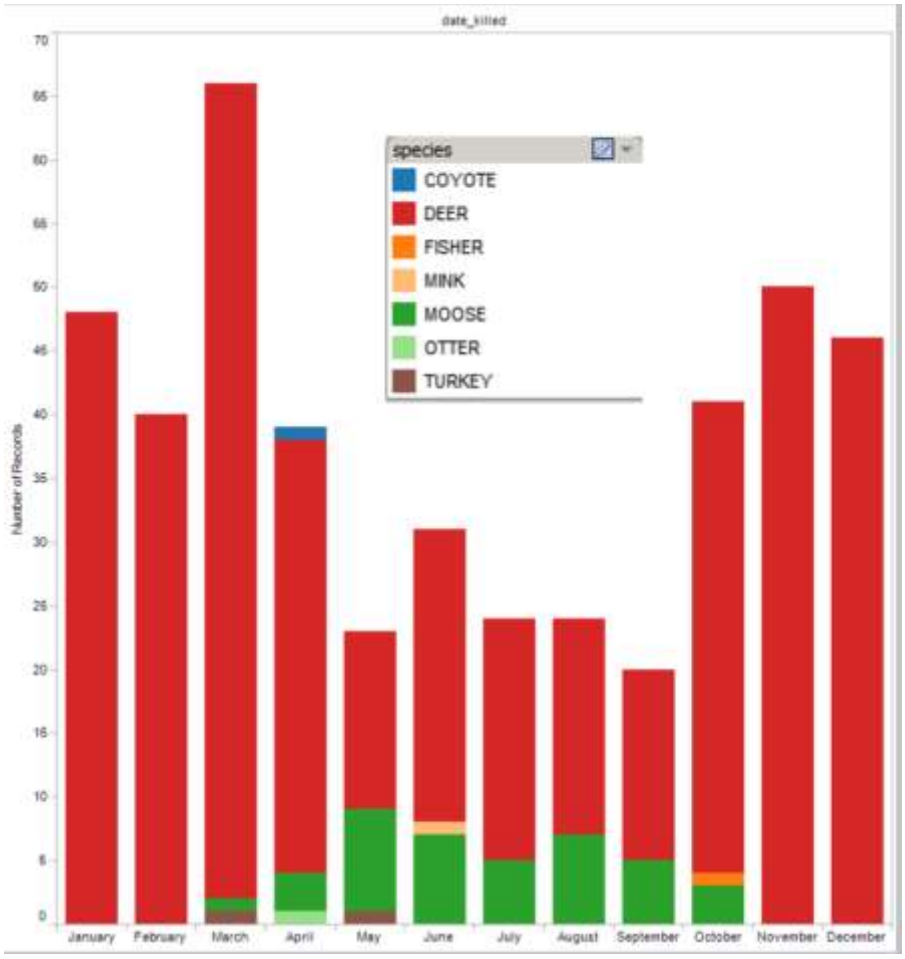
Summary: By analyzing 26 years of wildlife road-kill reports, this research identifies wildlife corridors road crossings in Moultonborough. These corridor locations can be useful for a variety of purposes, from placing motorist warning signs to scoring land for conservation value to partnering with land-owners to minimize the disruption of corridors.

Details: As part of the Conservation Commission's wildlife corridor projects, analysis of wildlife kill records from NH Fish and Game exposed clusters where deer and moose road-kills are more frequent. There are three primary areas and an additional 6 areas of interest

1. Route 25, from between Glidden Road, near Lake Kanasatka, 3.4 miles eastward to just east of Sheridan Road, where Route 25 crosses the stream that connects Garland Pond with Lees Pond. This is a continuous area of kill reports, but there are notable clusters within this stretch. The most significant area is from where Lake Kanasatka almost touches route 25, and east to the intersection of Moultonborough Neck Road. There are other clusters at Saw Mill Road, where Red Hill Road comes into Route 25, Fox Hollow Road, and near Sheridan road. This is a heavily-traveled auto route, with many businesses and connector roads. Red Hill, Moultonborough Neck and several water bodies are along here, making it a valuable wildlife habitat.
2. Route 171, from Severance Road, 1.2 miles to the town line with Tuftonboro. Shannon Brook crosses here and is likely a major wildlife corridor between the Ossipee Mountains and the low and wet land fields between Route 171 and Route 109.
3. Bean Road, from High Haith Rd ½ mile north to Wakondah Road. This area is near the northern extent of Lake Kanasatka and Wakondah Pond, and is a short path from Squam Lake. Other road-kill clusters are smaller, but suggest additional wildlife corridors.
4. Route 25; from the intersection of route 109, east along the airport runway to Evens Road then tapering off to the town line with Sandwich. This cluster also extends for the first mile down route 109 to where Halfway Brook crosses Route 109. It should be noted that there are smaller clusters all along Route 109 at the intersection with Route 171, and the entrance to Ossipee Park Road.
5. Bean Road, between the intersections with Tommy Lot Rd and Red Hill Road.
6. Moultonborough Neck Road, between the Highway Garage Drive and Greens Basin Rd. The stream from Mud Pond into Salmon Meadow Cove in Winnipesaukee, flows under the road here and is a likely wildlife corridor.
7. Moultonborough Neck Road, between Kona Farm Road and the southern intersection with School House Hill. Other small clusters occur at Ferry Road and Kimball Drive.
8. Route 109, near Suissevale Avenue, where Shannon Brook crosses Route 109.
9. Route 109, from the Tuftonboro border, up to Peak Drive.

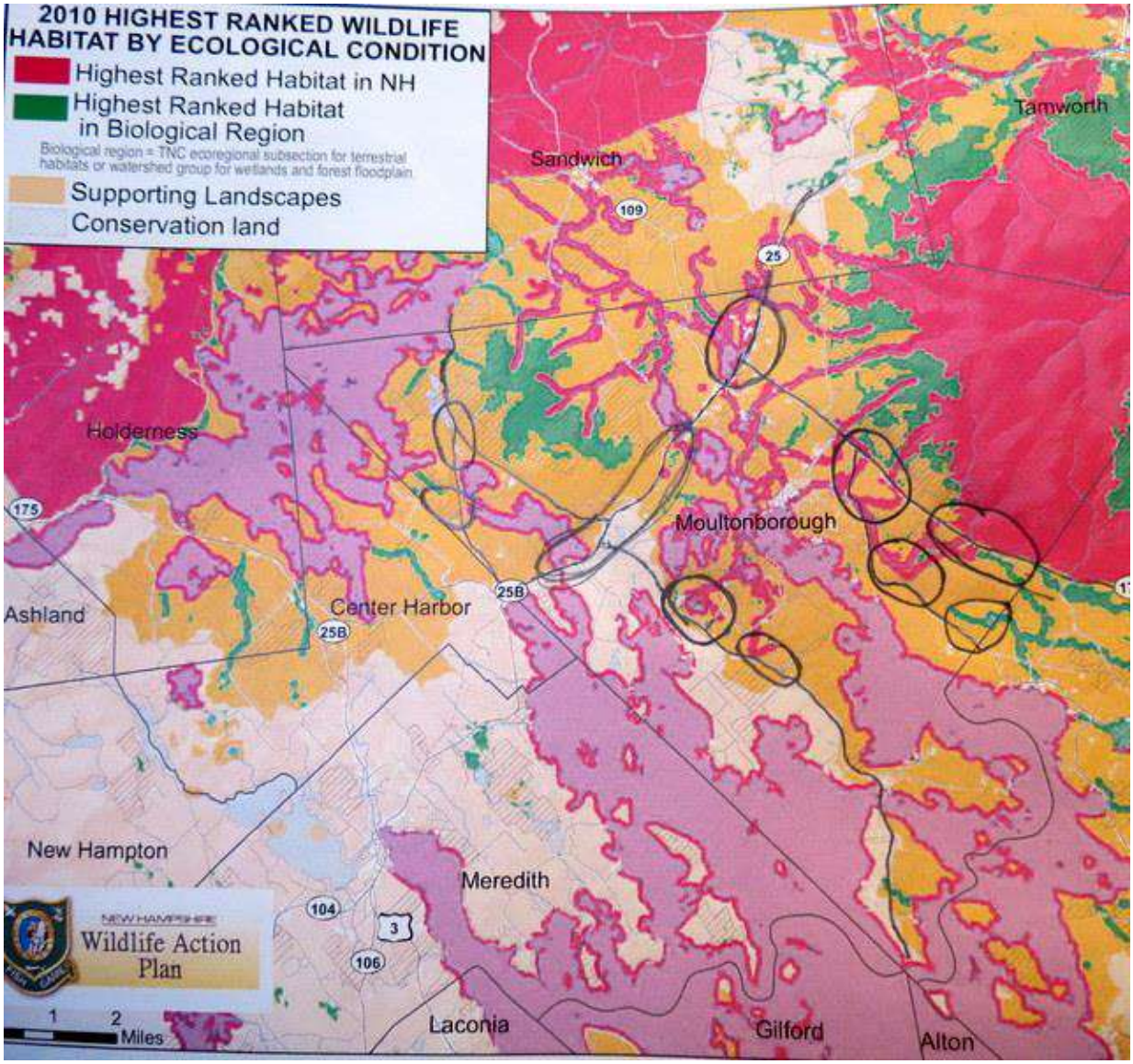
Methodology:
The NH Department of Fish and Game supplied its road kill records for Moultonborough on June 7'Th. The data set is 361 records, dating from June 1, 1986 through May 10, 2012. Of these, 217 points were plotted on a town map, indicating a deer or moose kill. The other 144 points were not used for clustering for a variety of reasons, mostly due to imprecise location descriptions like "Bean Road".
Once the data is plotted on a map, the clusters stand out clearly. For example, there are about 30 kill records between Glidden Road and Moultonborough Neck Road. There are another 24 records from the two spots where Saw Mill Road (near Red Hill Rd) comes out onto route 25. This suggests a wildlife corridor between Red Hill and Mud Pond down towards Winnipesaukee.

Recommendations:
1. Verify or procure motorist warning signs, near the largest clusters of wildlife road kill.
2. Request that future town reports of wildlife kill to Fish and Game include the geocoded location (GPS readings) so that follow-on analysis can be more accurate.
3. Conduct follow-on research to link cluster locations to actual corridor paths leading up to the intersections with the roads.



Road-kill analysis shows moose kill frequency rise in the summer while deer kill drop.

Clusters of wildlife road kill (indicated by hand-drawn circles) overlaid on a habitat map.



Example of town map with raw-data plots of road kill location records