Vernal Pools *updated 2010*

Vernal pools are small depressions in the landscape that hold water for at least two months and provide the only breeding habitat for certain types of amphibians and reptiles. The pools are free of adult fish and typically dry completely in the fall. Vernal pools act as little nightclubs where males and females meet. They also act as fast-food restaurants providing ample macro-invertebrate populations to feed larger animals. Vernal pools are some of the most diversely populated habitats found within the landscape. Species that may be observed using vernal pools include wood frogs, spring peepers, American toads, green frogs, gray tree frogs, bull frogs, spotted salamanders, blue-spotted salamanders, marble salamanders, fairy shrimp, whirligig beetles, predacious diving beetles, mayflies, many species of damselflies and dragonflies, amphipods, isopods, fishflies, fingernail clams, caddisflies and amphibious snails. Major threats to vernal pools are the habitat destruction caused by the filling of these wetland areas, and the clearing of all forested vegetation near the pools. Some studies are showing that vernal pool species only use the pools for two weeks a year and spend most of their time in the adjacent uplands. Some species will travel over 1000 meters to reach a vernal pool. Therefore, it is especially important to maintain the forested connection between vernal pools and forested upland areas. Dead trees (snags) lying on the ground or standing should not be removed because they provide excellent cover and shelter for species migrating from the forested upland to the vernal pool.

Documentation of vernal pools includes the collection of maps, biological data and photographs. The Vernal Pool Field Observation Form can be obtained from the Conservation Office or the Natural Heritage and Endangered Species Program's (NHESP) website and must be submitted to NHESP for accuracy and the actual certification. A vernal pool can be certified using two different methods, the obligate method and the facultative method. In February of 2009 the Dry pool method was eliminated, all reptiles and macroinvertebrates (except fairy shrimp) and some amphibians were removed from the certification process.

The obligate species method is conducted anytime that water is within the vernal pool and the presence of an obligate vernal pool species is found. Obligate vernal pool species such as fairy shrimp, wood frog and spotted salamander are most commonly used to document utilization of the vernal pool. Chorusing (calling) frogs, five mated pairs of amphibians in amplexis, the presence of egg masses, frog tadpoles and/or salamander larvae are photographed and included in the documentation package. A minimum of five egg masses of any obligate species must be found in order to certify a vernal pool using the obligate species method. Any

number of State-listed (rare) amphibian egg masses may also be used to certify the vernal pool. When photographing the egg masses it is extremely important to move very slowly so that the egg mass is not dislodged from the attachment site or the eggs may die. The egg masses should not be picked up out of the water. One way to photograph the egg masses without moving the branches to which they are attached is to gently place a white-colored dipnet or piece of Styrofoam (i.e. wash a piece of styrofoam used for hamburger packaging) behind the egg mass and take the picture. In addition to the species photographs, include a photograph of the entire pool filled with water. All photographs must be dated and signed.

For the obligate species method the documentation package must include, at a minimum:

- Signed Vernal Pool Field Observation Form
- Signed and dated photographs of obligate species [fairy shrimp, or adults (wood frog or salamanders) or at least five egg masses, or tadpoles, or salamander larvae]
- Signed and dated photographs of pool holding water
- U.S.G.S. topographic map, plus another map, with the site location marked

The facultative species method can be used later in the year when the earlier obligate species (usually March/April) have already left the pool. In this case, facultative vernal pool species such as spring peeper, gray tree frog, American toad, fowler's toad) may be found in the vernal pool. At least two of these species must be found in order to certify a vernal pool and there must be at least five mated pairs or five egg masses, tadpoles, or transforming juveniles. A photograph of the entire dry pool must be included as well.

Other information such as the size of the pool, amount of water within the pool and surrounding land use are also documented on the Vernal Pool Field Observation Form. A copy of the U.S.G.S. topographic map with the vernal pool marked on it must be submitted with the package for either method used. It is important to remember to use the buddy system when investigating vernal pools. Be aware of the trespassing laws in Massachusetts before you begin. Remember to copy all of the documentation within the package and send it to the Conservation Office when you submit the documentation to the NHESP. The Conservation Commission cannot ensure protection of a vernal pool if we do not receive the information.

For the facultative species method the documentation package must include, at a minimum:

- Signed Vernal Pool Field Observation Form
- Signed and dated photographs of at least two facultative species with at least five mated pairs or five egg masses, tadpoles or juveniles
- Signed and dated photographs of dry pool
- U.S.G.S. topographic map, plus another map, with the site location marked

The importance of preserving the forested and leaf litter habitats near vernal pools cannot be overstated. At the time of the 1999-2004 OSRP, Norton had six (6) certified vernal pools. Currently, 106 vernal pools have been certified. The increase in documentation of the vernal pools has been a direct result of an educational campaign by the Conservation Commission to foster stewardship for the wildlife habitat on private property. Several vernal pools on private property have been investigated by Conservation staff and certified with the Natural Heritage and Endangered Species Program. Certification of the pools offers them additional protection through the Massachusetts Wetland Protection Act, Clean Water Act, Title V, and MEPA

regulations. It should be noted that the presence of a vernal pool on private property has not had a negative effect on development of that property. In most cases, the project was redesigned slightly to allow for greater forested area adjacent to the vernal pool and to allow *wildlife migration corridors* to remain forested.

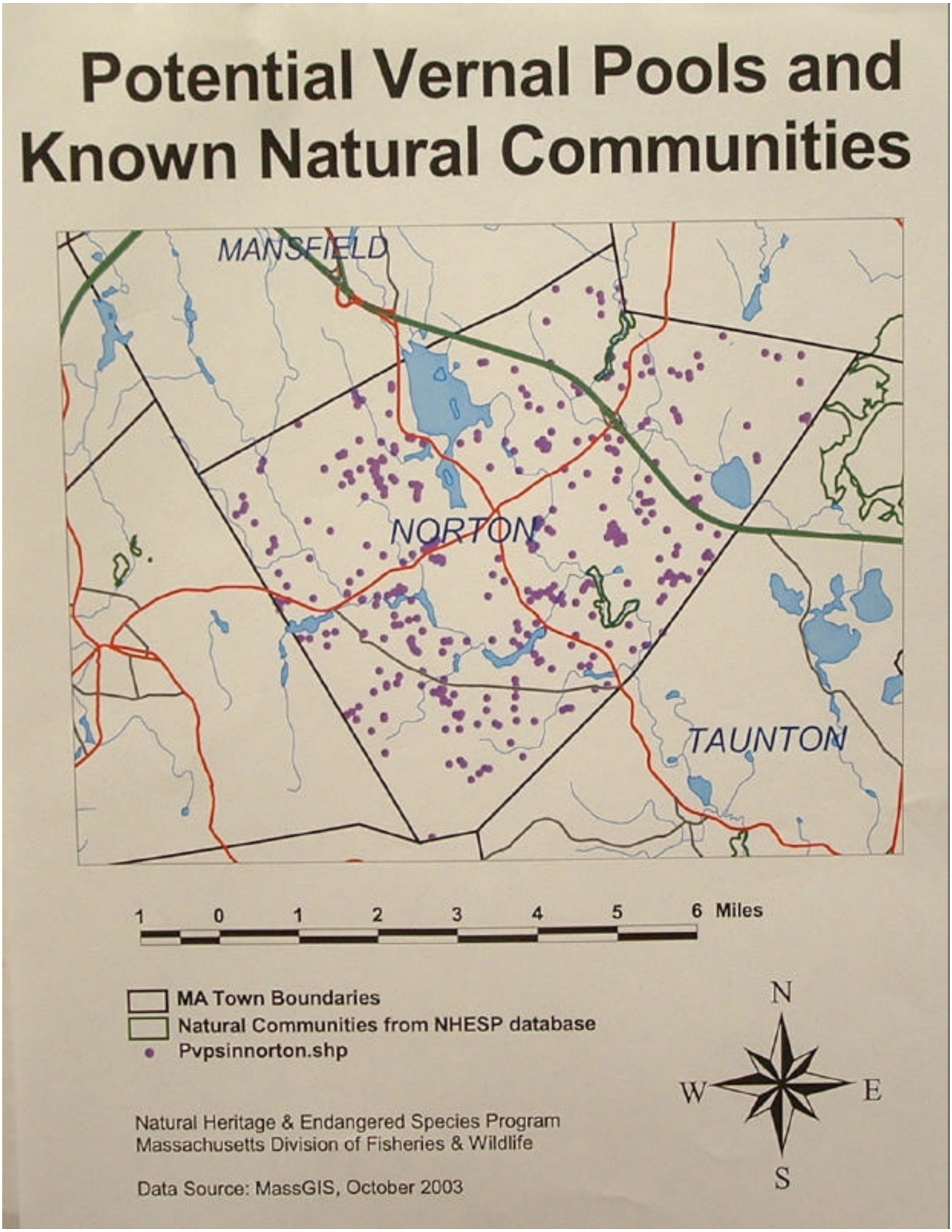
Where clusters of vernal pools are present on large undeveloped parcels, every effort is made to encourage a cluster development. By clustering the development a larger, more productive open space area could be achieved and by focusing the open space area on the vernal pool cluster, the town has a better chance of balancing development with natural resource protection.

Resources on Vernal Pools:

- *A* Field Guide to the animals of Vernal Pools. Leo P. Kenney and Matthew R. Burne. Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program and the Vernal Pool Association. May 2001, second printing.
- Vernal Pool Association. www.vernalpool.org
- Vernal Pool Lessons and Activities: A Curriculum Companion to Certified: A Citizen's Step-by-Step Guide to Protection Vernal Pools. Nancy Childs and Betsy Colburn. Massachusetts Audubon Society. March 1995, second printing.
- Certified: A Citizen's Step-by-Step Guide to Protection Vernal Pools. Elizabeth A. Colburn, Editor. Massachusetts Audubon Society. Winter 1997, seventh edition.
- Wicked Big Puddles. L.P. Kenney. Vernal Pool Association. Reading MA. 1995.
- Diving into Wicked Big Puddles. L.P. Kenney. Vernal Pool Association. Reading MA. 2000.
- Peterson Field Guides, Reptiles and Amphibians, Eastern/Central North America. Roger Conant and Joseph T. Collins. Houghton Mifflin Company: Boston. 1998, Third Edition.
- Stream Insects and Crustaceans. (Fact Sheet) Save Our Streams. 1-800-BUG-IWLA.
- Save Our Streams: Monitor's Guide to Aquatic Macroinvertebrates. Loren Larkin Kellogg. The Izaak Walton League of America. 1994, second printing.
- New England Freshwater Wetlands Invertebrate Biomonitoring Protocol (NEFWIBP): A Manual for Volunteers. Anna L. Hicks and Ethan J. Nedeau. UMass Extension and Massachusetts Coastal Zone Management. December 2000.
- Massachusetts Surface Water Quality Standards (314CMR4.00).
- Title 5 of the Massachusetts Environmental Code.
- Massachusetts Forest Cutting Practices Act Regulations.
- Massachusetts Endangered Species Act (MGL Chapter 131A) and Regulations (321CMR10.00).

Wildlife Habitats and Migration Corridors

For every given species there are certain life requirements that must be met in order to allow survival. Every species needs food, shelter, and water. How the species interacts with the environment is called *ecology*. The locations that contain a suitable plant community composition and structure, hydrologic regime and other characteristics where a species can acquire food, cover from predators, shelter, breeding areas, overwintering, and migration routes is called its wildlife habitat. Like people, not every plant community is suitable habitat for every species; some people prefer to live in the mountains while others prefer the coast. It is the same with the animal kingdom and to some extent the plant kingdom. Plants and animals have adapted


Potential Vernal Pools and Known Natural Communities
MANSFIELD
NORTON
TAUNTON
1 0 1 2 3 4 5 6 Miles
MA Town Boundaries
Natural Communities from NHESP database
Pvpsinnorton.shp
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Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries & Wildlife
Data Source: MassGIS, October 2003

to their specific habitats over time. The different habitat types can be described as *natural communities*. For example, a red maple swamp will provide different types of plant foods, shelter from wind, temperature, amount of sunlight, quantity of available water and animal community than a dry meadow.

Within a natural community, such as a red maple swamp, there will be a population of a given species. A *population* is a local group of breeding individuals. *Population diversity* is the number of populations within a habitat. In a large undisturbed red maple swamp there may be a high population diversity, or a large number of smaller groups of wood frogs dispersed throughout the habitat. The interaction between the populations allows the wood frog species to maintain a *genetic diversity*, referring to the variety among individuals (each frog) within a population. Some individuals within the population will have a different tolerance for changes in heat or the chemistry of water. They will have slightly different appearances like skin color or differences in behavior. Some of the wood frogs will be able to hop or swim faster or hide under leaves better. The differences between the individual wood frogs ensures that the population will be able to adapt to changes or evade predators. Without diversity within the population a single event could kill the entire population.

The type of natural community can have a direct correlation with the number of different species, or the species diversity. The *species diversity*, also known as *species richness*, is the pure number of different types of plants and animals. Take our red maple swamp. One may find wood frogs, white tailed deer, red-tailed hawks, chipmunks, dragonflies, sphagnum moss, tree lichens, mushrooms, cardinal flowers, and high-bush blueberries. The size of the natural community (acres) will also directly correlate to the species diversity. The larger the acreage, the greater chance that a larger number of species will be found. Similarly, a large undisturbed property that contains more than one natural community type will yield a greater species diversity. For example, Johnson Acres located on North Washington Street, has a number of different natural community types. The species diversity found within the red maple swamp would be added to the species diversity (white-footed mice, bluebirds, chokecherry, red tailed fox) utilizing the open field area, and the species diversity (wild turkey, shag-bark hickory, red-bellied woodpecker, eastern box turtle) utilizing the oak-hickory forest.

Within this large undisturbed property, containing different natural communities, are *wildlife migration corridors* that the local populations of a species will use to travel to other similar natural communities. Therefore, our wood frogs will spend most of their life in the forested upland areas, travel to the wetland or vernal pool areas to breed, and then return to the forested upland. Wood frogs could also travel to another vernal pool on a neighboring property and need the forested wildlife corridor in order to get there safely. In this way, the wood frogs can recruit other wood frogs to join their populations and prevent inbreeding. This greater abundance of different species within different natural communities creates a greater resilience of the different species to changes that could otherwise negatively affect a single population.

When large undeveloped areas become bisected with roads, the habitat is *fragmented*, or divided into smaller and smaller units, the wildlife migration corridor could be disrupted. A population may become isolated from other populations of the same species. The species can then either adapt to the isolation or the population's survival could be permanently threatened. When large habitats are fragmented the foraging areas of animals are limited, migration routes are disturbed or eliminated, the genetic diversity within each population is limited, the top carnivores (coyotes, bobcats) are lost, causing a boom in the meso-predators (like skunks and raccoons). Also, without a functioning *food web* the browsers (deer) become greater in abundance and can ravage the shrub layer needed for the shrub-nesting birds. The domino effect can clearly be seen throughout the habitat area.

On a landscape level, to preserve the most species diversity, one would have to create a *reserve system*, or a network of undisturbed different natural communities. The Canoe River Aquifer Advisory Committee (CRAAC) is trying to create a reserve system. Through the Canoe River Greenbelt, CRAAC is attempting to connect the five towns of Sharon, Foxborough, Mansfield, Easton and Norton with a 500-foot protected area on both sides of the Canoe River. The connection of various types of habitats and wildlife corridors along the Canoe River would create a very large reserve.

Finally, a non-*riparian* wildlife corridor exists within the Great Woods. Vast permanently protected forests between Mansfield and Norton provide safe migration routes for several species of mammals, amphibians, reptiles and birds. The Norton Historical Society, Mansfield Natural Resources Trust, Land Preservation Society of Norton, Mansfield Conservation Commission, and the Norton Conservation Commission all manage land within the Great Woods.

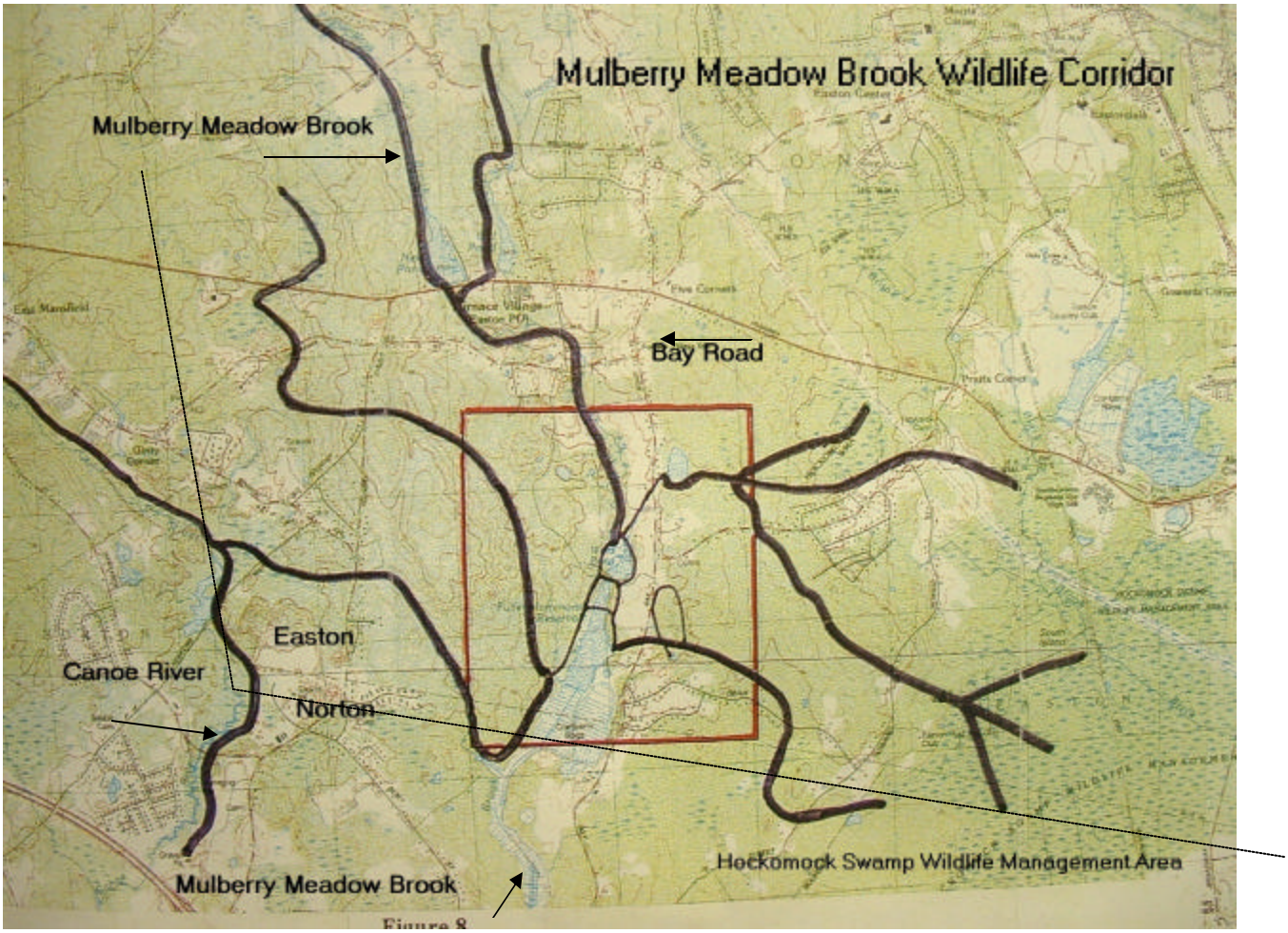
Important corridors for wildlife migration can be found primarily along the major river systems. Public and private strips of conservation land along these rivers provide important pathways for both upland and aquatic wildlife to find food, breeding and nesting areas. Roads, dams, buildings and other development restrict movement and reduce species survival rates. It is important to leave undeveloped buffer land along rivers and streams in order to maintain good water quality.

An important large wildlife corridor extends from Mansfield along the Rumford River through Norton and into Taunton along the Three-Mile River. The Rumford River enters Norton Reservoir in Mansfield, leaves the Reservoir, joins the Wading River to form the Three-Mile River and finally traverses Taunton to empty into the Taunton River. The City of Taunton is working with Norton and Dighton to nominate the Three-Mile River watershed as an *Area of Critical Environmental Concern*. Wildlife habitat and the watershed's historical values are the main reasons for the nomination.

The recent development of a large 500+ acre parcel by the Tournament Players Club (TPC) has received a nomination by National Audubon Society for *stewardship* of wildlife habitat. According to Chris Split at the TPC, to achieve Audubon Cooperative Sanctuary Certification, the TPC had to complete six components of the Audubon International Program. A Site Assessment and Environmental Plan has to be created. Then the TPC began work to complete separate certificates in Chemical Use Reduction and Safety, Water Conservation, Water Quality Management, Wildlife and Habitat Management and Outreach and Education. All of the

components were documented and submitted to Audubon International for certification approval. Achieving certification in each component is a lengthy process and can be done either separately or all at once.

A wildlife habitat evaluation sanctioned by the Friends of Wheaton Farm in Easton yielded surprising evidence of a rich wildlife corridor (illustrated as solid black lines on the above map) along the Mulberry Meadow Brook. The habitat evaluation, conducted by Call of the Wild, lists various types of wildlife, signs of wildlife (scat, tracks, etc.), and observations of wildlife. Call of the Wild also documented the various upland and wetland habitats found on the property. As a result of this habitat evaluation, a regional effort has begun to preserve the wildlife corridor from the Hockomock Swamp area to Mulberry Meadow Brook and then to the Canoe River.



The Open Space Committee began evaluating the wildlife habitat of the Canoe River throughout Norton in 2007. During the two-year project, the Open Space Committee identified 459 species of plants and animals. They held 30 nature walks, canoe trips and powerpoint presentations to the public for free. We hosted dragonfly identification workshops, bird walks, bug and butterfly hikes, a full moon hike and trips to local vernal pools. We canoed every section of the Canoe River throughout town and pruned plants along the river for a clear, narrow path for canoes. The Open Space Committee volunteered over 178.5 hours of their personal time to complete the

evaluation. Ten wetland natural community types and five upland natural community types were identified. Two unique communities were identified and three State-listed rare species were confirmed. Many residents and people from surrounding areas joined us in our trips and contributed to the success of the investigation.

Resources on wildlife habitats and migration corridors:

- Wildlife Reserves and Corridors in the Urban Environment: A Guide to Ecological Landscape Planning and Resource Conservation. Lowell W. Adams and Louise E. Dove. National Institute for Urban Wildlife: Maryland. 1989.
- Area of Critical Environmental Concern (ACEC) Program. Executive Office of Environmental Affairs. www.state.ma.us/dem/programs/acec

Rare, Threatened or Endangered Species (Animal) *updated 2010*

The Natural Heritage and Endangered Species Program (NHESP) reports the following wildlife as endangered, threatened or of special concern in the Massachusetts Endangered Species List. Also, Dwarf Wedgemussel is listed as a rare species on the Federal Endangered Species List. Every species on the endangered list is protected from a "taking" which is defined as harassing, harming; killing; disrupting nesting, breeding, feeding or migratory activities; transportation; or selling under the Massachusetts Endangered Species Act (MGL chapter 131A and the implementing regulations 321CMR10.00). "*Endangered*" is described as any reproductively viable native species that has been documented by biological research and inventory to be in danger of ***extirpation*** from the Commonwealth. "*Threatened*" is described as any reproductively viable native species which has been documented by biological research and inventory to be rare or declining with the Commonwealth and which is likely to become endangered in the Commonwealth in the foreseeable future. "*Special Concern*" is described as any native species which has been documented by biological research and inventory to be suffering a decline that could threaten the species in the Commonwealth if allowed to continue unchecked, or which occurs in such small numbers or with such a restricted distribution or specialized habitat requirements that it could easily become threatened. The term "*Watch List*" means the NHESP is carefully watching the species and its habitat in case conditions arise that warrant adding that species to the endangered species list.

The table on the next page is a list of those species that have been documented within Norton and the last date that the species was observed. In addition to the short description included in this section, the more detailed species description and habitat requirements can be found at http://www.mass.gov/dfwele/dfw/nhesp/species_info/mesa_list/mesa_list.htm

It is possible that more investigations of natural areas in Norton would yield additional findings of endangered, threatened or special concern animal species. For instance, the Bald Eagle has never been documented in Norton, but several residents have claimed to have observed adult and juvenile eagles in all of the major water bodies. Since this species is not only state listed but federally listed as rare, any resident observing a Bald Eagle should try to acquire a photograph, take notes on the activity observed (nesting, hunting etc.), complete a Rare Animal Observance Form and submit it to the NHESP. It is important to document the existence of these species so that the Town is informed where wildlife and their habitats need protection.

Common Name	Scientific Name	Status Code	Last Observed
Dwarf Wedgemussel	*Alasmidonta heterodon*	Endangered	1969
Eastern Pond Mussel	*Ligumia nasuta*	Special Concern	2002
Triangle Floater Mussel	*Alasmidonta undulata*	Special Concern	2001
Squawfoot Mussel	*Strophitus undulatus*	Special Concern	1984
Tidewater Mucket	*Leptodea ochracea*	Special Concern	1999
Blue-Spotted Salamander	*Ambystoma laterale*	Special Concern	1982
Spotted Salamander	*Ambystoma maculatum*	Watch List	2004
Eastern Box Turtle	*Terrapene carolina*	Special Concern	2003
Spotted Turtle	*Clemmys guttata*	Delisted, Watch List	2004
Wood Turtle	*Glyptemis insculpta*	Special Concern	2010, reported
Bridle Shiner	*Notropis bifrenatus*	Special Concern	1990
Cooper's Hawk	*Accipiter cooperii*	Watch List	1918
Sharp-Shinned Hawk	*Accipiter striatus*	Special Concern	1909
Ringed Boghaunter	*Williamsonia littneri*	Endangered	2009, reported

Species descriptions

Dwarf Wedgemussel (MA-Endangered, Federally Endangered) is a small mussel only about 1.5 inches long at the most. Its triangular or wedge-shaped shell (periostracum) is a yellowish-brown, olive-brown or blackish-brown color. It has a roundly pointed posterior end with concentric lines made of calcium carbonate that exhibit shell deterioration with age. The inside color of the shell (nacre) is usually bluish-white and sometimes iridescent along the posterior edge and sometimes it has a greenish or yellowish markings near the beak cavity. It is the only freshwater mussel in North America that has two lateral hinge teeth on the right valve and one tooth on the left valve. Dwarf Wedgemussel inhabits well-oxygenated streams and rivers with sand, muddy sand and gravel bottoms. It prefers slow to moderate currents and little silt. Dwarf Wedgemussel can sometimes be found near the banks among roots. However, it has not been verified from any location in Massachusetts since 1983 and is feared extirpated from the State. Changes to the habitat and water quality are the main causes for extirpation. The damming of streams, bridge construction and point-source pollutants may have eliminated the species from Massachusetts.

Eastern Pond Mussel (MA-Special Concern) is a medium to large sized narrow and elongated mussel approximately four to six inches long that tapers to a blunt point at the posterior end. The

outer shell (periostracum) is usually dark brown or black with some individuals exhibiting an olive green color. The lighter colored shells show dark rays. The inside of the shell (nacre) is a purplish, mother of pearl color or silvery-white to pink. There are two delicate lateral teeth (two on the left valve and one on the right valve) and two delicate pseudocardinal teeth (one or two on both the left and right valves). Eastern pond mussel prefers sand, silty-sand and some gravelly bottom areas of slow moving to standing water, coastal ponds, streams and rivers. Organic pollutants from residents abutting rivers and ponds contribute to the populations' decline. Acid rain and loss of host fish threaten the species' survival.

Triangle Floater Mussel (MA-Special Concern) is a subovate, plump-looking mussel with a roughly equal height-to-length ratio because of the tightly curved ventral margin. This mussel has a periostracum that is a yellowish-green, greenish-brown, black or golden brown color with numerous rays and an inflated umbos extending well beyond the hinge line. The inside color (nacre) is distinctly bicolored with the posterior half thin and iridescent bluish-white or bluish-pink and the anterior half thick with a whitish-pink or salmon wash. The beak is prominent. There is one stout pseudocardinal tooth buttressed with a heavy ridge in the right valve and two in the left. The lateral teeth are absent. The triangle floater does not appear to prefer one type of habitat over another but has been found in silt/sand bottom of a slow moving stream, within a gravel/sand bottom of a riffle/run portion of a stream, within crevices of rocks and sometimes within lakes.

Tidewater Mucket (MA-Special Concern) is a medium sized ovate mussel about 1.75 to three inches long. The ovate shell is thin and fragile with a translucent quality. The valves are laterally

inflated, strong and uniformly thick. The shell (periostracum) can be a yellowish or greenish-brown, pale reddish-orange/yellow or bronze, or a pale olive color with narrow, greenish obscure rays or without rays. It has low concentric growth rings. The males have a bluntly pointed posterior end while the females have a rounded or truncated posterior end. There are two lateral teeth on both the left and right valves. The left and right valves both have two pseudocardinal teeth that are thin and elongate and located well anterior of the beak. Tidewater mucket can

be found in slow moving waters within medium to large-sized rivers preferring coastal freshwater ponds with clear, clean water and a sandy bottom. Pollutants, acid rain and changes in the physical characteristics of their habitat have lead to the decline of tidewater mucket.

Squawfoot Mussel (MA-Special Concern) is also known as the "creeper" mussel. It has a subovate shell up to three inches long and usually thin and fragile. The shell (periostracum) is a yellow to greenish-brown color or dark brown to black. The surface is rough due to prominent growth rings. The color of the inside of the shell (nacre) is usually white, bluish-white with yellowish-green near the beak. The lateral teeth are absent and the pseudocardinal teeth are very small like a swelling rather than a tooth. The squawfoot mussel can be found in streams and rivers with sand and gravel bottoms.

Blue-spotted Salamander (MA-Special Concern) is a long, slender salamander with short limbs and long digits. It has a narrow rounded snout and usually dark blue to black with brilliant sky-blue spots on the lower sides of the body. The tail is long and laterally compressed. Blue-spotted salamander prefers moist, moderately shaded habitats like northern hardwood and hemlock forests with nearby vernal pools. Loss of vernal pool habitat and the surrounding upland within 500-1000 meters from the pool are the main causes of population decline.

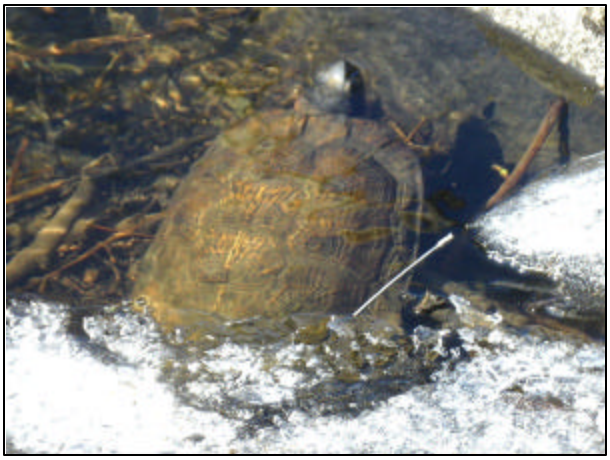
Spotted Salamander (MA-Watch List) was removed from the Massachusetts Endangered Species list but remains on the watch list due to the frequent filling of vernal pools and the surrounding upland habitat. The spotted salamander is a black salamander approximately 4.5 to 8 inches long with bright yellow spots. It is an obligate vernal pool species utilizing the pools for breeding in the spring and then returning to the surrounding upland for the rest of the year. Spotted salamanders can travel up to 190 meters to reach a vernal pool, making preservation of wildlife migration routes very important.

Eastern Box Turtle (MA-Special Concern) is a "land" turtle about 4.5 to 8 inches long. It has a short, broadly oval, high dome dark brown or black upper shell (carapace) with numerous irregular markings of yellow, orange or reddish spots, blotches, or stripes. The underside of the shell may be tan to dark brown or black and may be a mottled pattern of all three colors. The underside of the shell (plastron) is divided into two movable portions with a very strong hinge allowing the turtle to completely enclose its head, legs and tail within the shell. It is the only North American turtle that is able to "box" itself into its shell. The Eastern box turtle has four toes on its hind feet, a

short tail and an upper jaw with a down-turned beak. The Eastern box turtle can be found in dry and moist woodlands, brushy fields, thickets, marshes, bogs, stream banks and well-drained bottomland but prefers open deciduous forests and the pine barrens and oak thickets of Cape Cod. Habitat fragmentation is the main reason for the turtle's decline in Massachusetts. Collection of the turtle for pets, destruction of nests by other animals and road mortality are the other main causes for the turtle's decline. DO NOT KEEP AS A PET!

Spotted Turtle (MA-delisted, Watch List) is also known as the polka-dot turtle because of the yellow and sometimes orange spots on the black upper shell (carapace). Spotted turtle is about 3 to 5 inches long with gray to black limbs and neck that sometimes also have yellow or orange spots. The underside of the limbs is a pale salmon color. The underside of the shell (plastron) is hinged and a creamy yellow color with large black blotches on the border. Males typically have a black or dark-colored lower jaw and brown eyes and the females typically have a yellowish unmarked jaw with orange-red eyes. Spotted turtles inhabit a variety of wetlands including forested red maple and Atlantic white cedar swamps, marshes, bogs, ponds, brooks, streams and woodland vernal pools. It is estimated that about 40% of the spotted turtle population within Massachusetts occur within Bristol and Plymouth Counties. Major threats to their survival are collection for the pet trade, filling of vernal pools, habitat fragmentation, road kills and nest predation by other animals. Spotted turtle was removed from the MA Endangered Species List but it is still illegal to harm or harass this turtle. It is also illegal to transport or keep it as a pet. DO NOT KEEP AS A PET!

Wood Turtle (MA-Special Concern) is distinguishable from other turtles by its bright orange throat and front legs. The scutes of the carapace are very highly sculpted and look like they were carved into rough pyramid shapes. The shell color is variable, ranging anywhere from very light brown to black and may have yellowish rays or lines within each scute. Wood turtles are associated with streams and rivers. They use vernal pools and agricultural fields. Photo by Jane Pierce. DO NOT KEEP AS A PET.



Bridle Shiner (MA-Special Concern) is a slim-bodied fish with a large eye in the minnow family. The body is slightly compressed and deepest at the dorsal fin. It has a straw-colored back while the lower side and belly are straw-colored with silver flecks. A black side stripe circles the snout

and extends onto the tail fin base with a lighter stripe above it. The slightly subterminal mouth is round or pointed snout with a black pigment on the chin. There are thirteen scales before the dorsal fin which begins above the front half of the pelvic fin base. The scales on the back are darkly outlined often with a dusky stripe along midline of the back. The bridle shiner can be found in clear, warm, slow streams and rivers, ponds, lakes, and impoundments with submerged aquatic vegetation. Degradation to water quality and wetland ecosystems could be reasons for decline.

Cooper's Hawk (MA-Watch List) is a crow-sized raptor with a long tubular body, long head, and fairly long and straight-edged wings. The Cooper's hawk has a dark blue-grey crown in contrast to the lighter shade on the nape, back and upperwing coverts. It is white below with heavy red barring on the breast and flight feathers. The adult has red to orange eyes, reddish-brown cheeks, yellow bill and yellow legs. Females are less blue and more brown above while the immature hawks have a solid orange-brown head and white body and underwing coverts with fine reddish-brown streaking restricted to the forward half of its body. All ages have the long, club-shaped rounded tail with four equally sized bands of dark and light brown with a broad, bright white terminal band at the tip of the rounded tail. It resembles a "Flying Cross" in flight and is also known as a "chicken hawk". Cooper's hawks prefer white pine groves but can be found in deciduous and coniferous woods. Most nests can be observed at forest edges, near agricultural lands, fields and forest clearings. The main cause for population decline is overhunting due to the hawks' preference for poultry. DDT also caused a high number of deaths due to calcium depletion of the eggshells and malformation. Maintaining the mosaic of deciduous and coniferous forests will help stabilize this species habitat.

Sharp-Shinned Hawk (MA-Special Concern) is slightly larger than a blue jay. It has a slim body, short, broad wings with rounded tips, and a long, narrow and usually notched or square-tipped tail. The sharp-shinned hawk is dark slate-grey above with white underparts finely barred with red-brown. Its head is slate-grey down to the eye line, white thinly streaked with brown below the eyeline and has red-brown cheeks. The tail has three to four equally wide dark and light brown bands and a narrow grayish-white terminal tip. The eyes are red and this hawk has long stick-like bright yellow legs with a raised ridge on the inside front of the tarsus (not actually a "shin"). Females are less blue above, lighter below and larger than the males. The juveniles and immature adults have brown upperparts splotched with white and the underparts are splotched with brown. The sharp-shinned hawk prefers red spruce with white birch forests or an extensive mixed woodland and coniferous spruce forest. The main cause for population decline is due to slaughter by people who thought the hawk killed songbirds. As with the Cooper's hawk, DDT

had a very negative effect on the sharp-shinned hawk populations. Lack of red spruce forests may also limit the species' available habitat in Massachusetts.

Ringed Boghaunter (MA-Endangered) is a small dragonfly approximately 1 ½ inches long. It is black with orange-yellow rings around the abdomen and on the thorax. It has grayish blue eyes and a dark brown body. It has pale orange-brown face and mouth. Pale orange rings are on all but the first and last segments of the abdomen. The abdomen makes up about 2/3rds its body length. The wings are about 1 inch long and mostly transparent except for a small orange patch near the base of the wings. The females look similar to the males but have thicker abdomens and shorter terminal appendages. As the name suggests it lives in bogs or acidic coastal plain ponds as a nymph. Ringed boghaunters are very inconspicuous and can easily be overlooked. They can be found in the bog flying low, basking on vegetation or along trails in the woodland from April through June.

Estimated habitats

Most of the species listed above are sensitive to environmental changes. The mussels, for instance, are very sensitive to changes in water temperature, flow rates, water quality, and the amount of water within the riverbanks. Salamanders are sensitive to changes in forest canopy and leaf litter. Our turtles are greatly impacted by roads and fragmented habitats. The hawks are disappearing as our farmland and meadows disappear. Some of the records of these rare species are extremely old and should be field verified within this update OSRP.

The approximate habitats of state-listed wildlife species, protected under the Massachusetts Endangered Species Act as well as the Massachusetts Wetland Protection Act and Regulations, are shown on a map by the NHESP entitled, "the Estimated Habitats of Rare Wildlife and Certified Vernal Pools". Each town has an Estimated Habitat map and it is usually located in the Conservation Office. Any proposed project that appears in one of the *rare habitat polygons* on the map, and that requires a wetland permit, must file for review by the NHESP. NHESP comments on the project and the rare species. The Conservation Commission must then condition a project such that the rare habitat area is protected. This is done by writing specific conditions, within the Order of Conditions (wetland permit), under which a project may be built. Species in these locations may also be protected if a project is required to file for a permit under the Massachusetts Environmental Policy Act (MEPA). All of the polygon areas shown on the Estimated Habitat map are recommended for further study and protection by easement or ownership. Estimated habitat maps also include the locations of all certified vernal pools discussed in a previous section.

Resources on rare wildlife:

- Rare Animal Fact Sheets. Massachusetts Natural Heritage and Endangered Species Program. http://www.mass.gov/dfwele/dfw/nhesp/species_info/mesa_list/mesa_list.htm
- The Year of the Turtle. David Carroll.
- Peterson's Field Guide to Freshwater Fish.
- The Virtual Aquarium of Virginia Tech (online resource)
- The Freshwater Mussels of Connecticut. Connecticut Department of Environmental Protection. www.dep.state.ct.us/burnatr/wildlife/learn/fwmusl/dwwm.htm
- Massachusetts Endangered Species Act (MGL Chapter 131A) and Regulations (321CMR10.00)

Future of rare species within Norton

The future of rare species within the town is influenced by a number of factors. Education about the species and habitat requirements is extremely important in order for the species to survive. Habitat destruction, fragmentation, and road kills are other obstacles to preserving our rare species. Predator pets can be a problem for certain bird and dragonfly species. Informing the public about the rare species and threats to their survival may be the most important method for ensuring their protection.

However, the public's perception of a species' life needs can be very different from their actual needs. For instance, some residents prefer to clear their entire parcel of land for a large lawn, while preserving some of the natural environment by leaving an uncut vegetative strip may be all that a species requires for survival. Our rare freshwater mussels and fish require protection of rivers and streams. The protection needed includes preventing the cutting of vegetation along the stream banks; ensuring that a large uncut vegetative buffer area (like the riverfront area) is not cut, cleared, or developed; ensuring that storm water entering a river or stream is as clean as possible by requiring more than the minimum requirements of the Storm Water Management Policy for new development projects; and ensuring that the quantity of water within the stream remains constant by limiting or prohibiting on-site irrigation wells. Rare native plants in Norton require protection of their particular habitat type including the prevention of clearing or filling vernal pools; prevention of motorized vehicles from driving through vernal pools; and ensuring the quality and quantity of water entering vernal pools remain constant. Our rare native turtles and salamanders require protection of their habitats including the vast upland areas that surround the wetland habitat that they use; protection from predators such as dogs and cats; protection from pollution such as fishing line and plastics left in and near waterways and water bodies; and protection from vehicles trying to straddle a turtle crossing a road. Our rare native birds require the maintenance of field habitats including a cutting program to ensure the field does not follow the natural ecological succession into a forest or cutting of new fields.

All rare species records (flora and fauna) should be field verified. It should be documented whether the habitat has changed or if the species is simply not found. Any new observations of Federal- or State-listed species should be documented and submitted to the Natural Heritage and Endangered Species Program (NHESP). Any areas found to contain rare species should be listed as a priority area for acquisition or other permanent protection. Any publicly protected land containing a rare species should be maintained in order to preserve the habitat type. Residents have a *stewardship* responsibility to preserve the various habitat types found within Norton. We

can only preserve our native wildlife by protecting their habitats and making a concerted effort for their preservation.

Things residents can do to preserve rare species and rare habitats in Norton:

1. If a turtle is trying to cross a road, do not try to straddle it with the car. Some turtles are taller than you may think. Stop the car, even if in traffic. Safely get out and carry the turtle across the road in the direction that the turtle is headed. Do not bring the turtle in the opposite direction or to the closest water body; it will only try to cross the road again. Be very careful if it is a snapping turtle. They can jump, hiss, bite and move very quickly.

2. Do not ride motorized vehicles in dry vernal pools.

3. Leave as much of the natural vegetation as you can on your property. Not only is this beneficial for wildlife, it conserves water.

4. Take photos of plants and animals you think may be rare. Bring them to the Conservation Office and the Conservation Agent can help you identify them. If they are in fact rare, then the Conservation Office can offer assistance in completing the rare species observation form.

5. Submit Rare Species Observation Forms to the Natural Heritage and Endangered Species Program with photographs and all other required documentation to: NHESP, DFWELE, Route 135, Westborough, MA 01581.

Landscaping for wildlife

Homeowners can enhance their property to attract wildlife. Butterfly and hummingbird gardening has become very popular and many residents provide food via bird feeders and salt licks for deer. When planning to landscape for wildlife it is important to incorporate more than one aspect of the life functions for the species one wishes to attract. For example, when planting a butterfly garden it is important to remember to plant some of the shrubs required by the caterpillars (larval stage) as well as the nectar-rich plants for the butterflies (adult stage). Water, food, cover, nesting places, and shelter are part of the life functions of our wildlife. It is also important to provide year-round food rather than just a feast for the summer months. Existing water areas like ponds, wetlands and vernal pools help support our wildlife. Bird baths, shallow dishes and container water gardens can fill the need for providing water. Trees and shrubs that provide nuts and berries are used by various wildlife for food sources. Rotten logs and rock piles could also be existing elements that provide earthworms and bugs as food sources for other animals. Adding these features to a portion of one's property can enhance and attract wildlife. Adding plants that produce nectar, seeds, berries and nuts can also enhance a property. Cover is provided by evergreen trees, dense hedges, tall

grasses, brush piles, rock piles and fallen logs. Additional cover types can include a small woodpile and planting trees and shrubs with different structures. Some birds only use the bottom branches of a tree while others only use the middle branches. Other birds may only utilize the canopy of the tree. When selecting trees and shrubs it is important to choose ones that provide these different perching areas. Nesting places are important for wildlife as well. Existing nesting places include evergreen and deciduous trees, thickets, hedgerows, and dead trees (snags) and fallen logs. The availability of nesting places can be enhanced by adding these features or by adding nesting boxes, bird houses and the species-specific flowering plants for the butterfly larvae that was previously mentioned. Finally, planting in groups, keeping a variety of plants, and using native plants will help attract wildlife to one's yard.

Trees that provide good wildlife habitat include American Beech (Fagus grandifolia), Balsam fir (Abies balsamea), Black Cherry (Prunus serotina), Black gum (Nyssa sylvatica), Crabapple (Malus species), Flowering dogwood (Cornus florida), Hawthornes (Crataegus species), Hickories (Carya species), Oaks (Quercus species), and red mulberry (Morus rubra). Even standing dead trees and logs provide excellent wildlife habitat. A standing dead tree can provide food for woodpeckers. The woodpeckers can make a hole suitable for a screech owl or other bird to use as a nest. This dead log is a place for insects like millipedes and sow bugs to live. It functions as cover for amphibians and reptiles on their way to an adjacent vernal pool.

Some examples of shrubs that provide good wildlife habitat include Blueberries (Vaccinium species), Red Osier Dogwood (Cornus sericea), Holly or Winterberry (Ilex verticillata), Bayberry (Myrica species), Spicebush (Lindera benzoin), Elderberry (Sambucus canadensis), Smooth Sumac (Rhus species), Serviceberry (Amelanchier species), Cotoneaster (cotoneaster species), Viburnums, Huckleberry (Gaylussacia species), and Bearberry (Arctostaphylos species).

Vines and nectar plants include Trumpet creeper (Campis radicans) and grapes (Vitis species), Asters, Azaleas, Butterfly bush (Buddelia alternifolia), Butterfly weed and milkweeds (Asclepias species-pictured left), Coneflowers (Echinacea species), Bee balm (Mondarda species), Cardinal flower (Lobelia cardinalis), Columbines (Aquilegia species), Delphiniums, Fuchsias, Lupines, Penstemons, Phlox, and Salvias.

Don't be upset with your bugs! Not all bugs are bad. Bats, bees, birds, centipedes, earthworms, hoverflies, ladybugs, toads and frogs are our friends. About 30% of our diet is the direct result of a bee visiting and pollinating a flowering fruit tree or vegetable plant. Our garden friends eat insects including mosquitoes, aerate our soil, remove decomposing matter, provide food for other wildlife, and eat other insects that are not as beneficial. Plant yellow and single flowering plants

like marigolds, lemon balm, black-eyed susans, nasturtiums or daisies, lavender and thyme to attract our beneficial wildlife. Remember to keep them in the garden.

Be careful with pesticide applications, fertilizers, and other chemicals because they can kill our beneficial wildlife. Some of the organic and homemade pesticides like softsoap spray can eliminate the pests but not harm the rest of the wildlife. Keep an eye on cats. They are becoming the number one killer of butterflies and birds visiting bird feeders and can kill rabbits, shrews, mice, snakes, toads, frogs, and dragonflies. Some people recommend tying a small bell onto a cat's collar to allow the cat to "play" and keep its hunting skills sharp but not actually allow the cat to needlessly kill its "prey". Also, keep an eye on dogs. They can carry and kill turtles, rabbits and woodchucks.

Resources on landscaping for wildlife:

- "Watershed Friendly Jane" pamphlet. Riverways Program.
- "75 Easy to Grow Native Plants" pamphlet, New England Wildflower Society. *www.newfs.org*.
- "Wildlife Habitat", Backyard Conservation pamphlet, USDA Natural Resources Conservation District, National Association of Conservation Districts, Wildlife Habitat Council, April 1998. National Association of Conservation Districts, 1800-825-5547.
- "Bayscapes Action Guide, Home Landscape Audit: Wildlife Habitat" U.S. Fish and Wildlife Service, Chesapeake Bay Field Office, 177 Admiral Cochrane Drive, Annapolis, MD 21401. 401-573-4578.
- Alliance of the Chesapeake Bay, Inc. 1-800-662-CRIS.
- Landscaping for Wildlife. Carrol L. Henderson. Nongame Wildlife Program-Section of Wildlife. Minnesota Department of Natural Resources. 1987. Copies can be obtained by calling 1-800-657-3757.
- Ortho's All About Attracting Hummingbirds and Butterflies. Meredith Books. Iowa. 2001.

Certified Wildlife Habitat *–new 2010 by Patricia MacLeod by interviewing Kathy Ebert-Zawasky*

The Land Preservation Society (LPS) is a non-profit, independent conservation group chartered in 1970 by the State of Massachusetts and currently holds over 900 acres of land in the Town of Norton. This group is dedicated to keeping a variety of types of land wild for the conservation of plant and animal species.

They are sponsoring "Certify your yard as a Certified Wildlife Habitat™ with the National Wildlife Federation". This program is run by the National Wildlife Federation and is part of the National Wildlife Federation's Certified Wildlife Habitat™ program.

This program is an educational and participatory way to join other wildlife enthusiasts who have been recognized for creating havens for neighborhood wildlife in their very own yards. You only need to provide elements from the following areas: Food Sources, Water Sources, Places for Cover, Places to Raise Young and Sustainable Gardening. You can take part in this program whether you have an apartment balcony or 20- acre farm. By being a member you are doing your part to help support wildlife and native vegetation in your area. It is a great project to do as a family and to show others your support of our wildlife partners. There is a $20 fee to register your yard but this fee helps support National Wildlife and includes a subscription to their magazine.

The Land Preservation Society of Norton Inc. has detailed information on their website: http://nortonlandpreservation.org. From this website you can download an application, watch a presentation on the program and access other information from the National Wildlife Federation's website at http://www.nwf.org. It is the hope of the Land Preservation Society to get 150 yards in the Town of Norton certified, making Norton the second town in Massachusetts to achieve the status of Community Wildlife Habitat. It will be a goal to accomplish this during the Tri-centennial year.