CONSERVED LANDS

Dummerston contains a wide variety of conserved and publicly owned undeveloped land. As seen on the *Conserved and Working Lands with Existing Development* map, these areas are distributed throughout Town. In addition to showing land owned by the Town that is managed for conservation purposes, this map also shows private land in Vermont's Use Value Appraisal Program (also referred to as Current Use).

The Nature Conservancy has conserved 496 acres of land on Black Mountain through a combination of ownership and conservation easement. This land, known as the Nature Conservancy Preserve, is accessible to the public via hiking trails. The Vermont Land Trust holds conservation easements on many parcels in town. These lands have a formal, legal restriction on future development and are generally not open to the public.

Deleted: 553

Publicly-owned lands in Dummerston include Dutton State Park and Prospect Hill. Dutton State Park consists of 12 acres along Route 5. Prospect Hill is a 37-acre wooded hillside with cleared land at the top. The property is managed by trustees with the Conservation Commission providing stewardship.

As indicated on the map, many parcels in current use either abut or are in close proximity to conservation and undeveloped land owned by the Town. Given the importance of large forest and habitat blocks for wildlife, groundwater recharge, and the preservation of rural character, it may be worthwhile for the Town to work with private owners of land in current use to afford them more permanent protection.

Conserved Lands Goals, Policies, and Action Steps

Goal 1:	To encourage preservation of undeveloped land as an important element in shaping Dummerston's development pattern and in preserving its aesthetic and environmental quality.

Policy 1.1: **The Town will give high priority to and strongly encourage landowners to maintain undeveloped land that:**

Deleted: ing

- **Protects the water, wetland, and ecological resources discussed in this Town Plan**
- **Is adjacent to or within the important wildlife corridors**
- **Is in agricultural use, or which contain prime farmland soils;**
- **Provides space for active and passive recreation**
- **Protects scenic views**
- **Provides public access to the waterfront**
- **Provides buffers between compact settlement areas and the rural countryside**

Action Steps:

a. Work with conservation land trusts and other conservation organizations to educate landowners about land conservation options. (Conservation Commission)
b. Use multiple strategies and means to protect and preserve land and resources, including for example, direct acquisition, conservation easements and a natural heritage registry.
(Conservation Commission)
c. Consider establishment of a Conservation Fund, perhaps through expansion of the Town Farmland Protection Fund. (Conservation Commission, Farmland ProtectionCommittee)

Deleted: Town

Deleted:

NATURAL RESOURCES

Water and Wetland Resources

1. Watersheds

A watershed, also known as a drainage area, is a land area which collects precipitation and contributes runoff to a receiving body of water or point along the watercourse. Watersheds are delineated by identifying the highest topographic points in a given area, and determining the direction in which water will flow from these points. Land uses within a watershed can affect water quality.

The entire town of Dummerston is located within the greater Connecticut River watershed. As with most large rivers, the Connecticut River has numerous subwatersheds. Dummerston is divided into three subwatersheds: Lower West River, Connecticut-River Dummerston and the Whetstone Brook. For planning and management purposes, Vermont Agency of Natural Resources has divided the state into basins. Dummerston lies in Basin 11 (West River Watershed) and Basin 13 (Connecticut River Direct). A draft Basin 11 Management Plan has been developed and was released for public comments. The Vermont Agency of Natural Resources is currently reviewing the draft plan. The plan was drafted by the Natural Resource Conservation District, Windham Regional Commission, and a representative from the Agency of Natural Resources. However, it relied on extensive public participation to inventory uses and problems and to develop strategies for maintaining or enhancing water quality and remedy the problems. Issues such as water quality, erosion control, stormwater runoff, deforestation and buffer loss, and flow regulation and flood control are addressed within the Plan. In Dummerston, numerous projects were undertaken at the Covered Bridge to address water quality including the Park and Ride, rain garden, and steps to the West River.

The watershed for the Brattleboro Water Department, which serves as the drinking water source for the Town of Brattleboro, extends into Dummerston. Surface water source protection areas have been developed around Brattleboro's water supplies and extend into Dummerston.

2. Surface Water Resources

Surface water resources include lakes, ponds, streams, rivers and wetlands. These resources serve many important functions in a community, including water storage, aquifer (groundwater) recharge, water supply, wildlife habitat and recreational opportunities.

a. Rivers and Streams

Dummerston's most prominent surface water resources are the Connecticut River and the West River. The Connecticut River forms the entire eastern boundary of the Town and serves as a regional recreational resource. The West River bisects Dummerston in the western part of Town and is also an important resource, particularly for recreation and

wildlife habitat. Other important watercourses include Stickney Brook, Falls Brook, Salmon Brook, Crosby Brook and Canoe Brook.

Water Quality in our rivers and streams is dependent to a large extent on the landscape directly influenced by the watercourse, the riparian areas. The vegetation in a riparian area mitigates erosion and provides shade. Riparian areas also contribute leaves, fallen branches and tree trunks to streams, providing important components to aquatic habitat. These areas also serve as important travel corridors for wildlife, and because of the dynamic nature of rivers and streams, riparian areas host a high diversity of plants, animals and natural communities. The West River and its riparian area is considered a Priority Aquatic Feature by the Vermont Department of Environmental Conservation. There are a number of plants here that are not found elsewhere in the state, and several significant natural communities occur next to the river as well.

Both the West River and Connecticut River, each with about five miles of riverbank, are part of the Connecticut River Atlantic Salmon Restoration Program. Salmon parr, the result of West River stocking, have been found in recent years in several brooks entering the West River in Dummerston.

Warm water sport fish inhabiting the two rivers include smallmouth and largemouth bass, sunfish species, yellow perch, walleye, chain pickerel, northern pike, brown bullhead and white perch.

Cold water fisheries supporting native populations of brook, brown and rainbow trout include Stickney Brook, Salmon Brook and Canoe Brook and numerous other smaller brooks. Generally, brook trout are more numerous in the upper reaches where water temperatures are colder and contain more dissolved oxygen. Brook trout serve as indicators of the health of the watersheds they inhabit. Well established native populations, such as those in Dummerston, demonstrate the stream ecosystem is healthy and the water quality is excellent. Trout habitat is significantly degraded when trees shading the water are removed, and stream banks are not stabilized by vegetation. This results in high temperatures that brook trout cannot tolerate, and erosion and stream sedimentation that destroy fish spawning and nursery areas. Brown trout and rainbow trout, which are more tolerant of higher water temperature and lower oxygen content, are found in the middle and lower sections of Dummerston brooks, with rainbows concentrated in the lower sections adjacent to the Connecticut River.

The West River, Connecticut River (where it flows by Dummerston), and most streams in Dummerston are classified by the State of Vermont as Class B waters. This classification means “suited for bathing and recreation, irrigation and agricultural uses, good fish habitat, good aesthetic value, acceptable for public water supply with filtration and disinfection.” Stickney Brook is Class A from its headwaters to where water is diverted to Pleasant Valley Reservoir. This watershed in Dummerston serves as Brattleboro’s public water supply.

The most significant regulatory mechanism to safeguard Dummerston's surface water resources is the designation of Shoreland Areas in the Zoning Bylaw. Shoreland areas are defined as lands falling within 500 feet of the West and Connecticut Rivers, within 250 feet of larger brooks (Fall Brook, Stickney Brook, Canoe Brook, Crosby Brook, and Salmon Brook), and within 100 feet of smaller brooks that flow year-round. The regulations feature a 50 foot building setback from the normal mean watermark and limitations on septic locations.

Adjacent to the watercourses are floodplains, relatively flat areas that experience occasional or periodic flooding. The Federal Emergency Management Agency (FEMA) has mapped flood hazard areas, areas with a one percent chance of flooding in any given year. The most recent maps became effective September 28, 2007. The Town participates in the National Flood Insurance Program and has adopted and enforces a Flood Hazard Bylaw. By doing so, property owners in Dummerston are able to obtain federal insured flood insurance at affordable rates and flood disaster assistance. The Flood Hazard Bylaw regulates development within the FEMA-defined flood hazard areas by imposing design standards that are intended to minimize property damage during flood events.

Due to the importance of these surface waters, it is critical that they are protected. Protecting surface water quality includes stream bank management, overseeing point source discharges of wastes, minimizing erosion and sediment transport issues associated with our dirt and paved roads, and controlling non-point sources of water pollution (for example, agricultural run-off, illegal dumping and erosion from logging or construction). Failure to do so will result in stream degradation.

There are two particular areas of concern in Dummerston that have been noted to date. Improperly installed culverts are making several brooks and streams inaccessible or unlivable to fish and other species. In addition, Crosby Brook, with headwaters in Dummerston, has been identified by the State as being of immediate concern. When it enters the Connecticut River in Brattleboro, it is essentially dead. The pollution sources have yet to be determined; however river stewards are looking at possible sources in both Brattleboro and Dummerston.

The Rain Garden at the Dummerston Covered Bridge is a good example of a project that seeks to divert stormwater run-off from the parking lot and Route 30 to a special pool so that particles can settle out. The pool is designed with a special bio-retention mix of soils that are perfect for native plants that like fairly wet conditions. The plants use the water and help the evaporation process to prevent most of the storm water from reaching the West River. Ensuring that development has appropriate stormwater controls can help prevent degradation of local water quality and prevent harm to fish habitat. The use of rain gardens and other low-impact development techniques during site planning is an environmentally friendly and cost effective way to handle stormwater.

Historically, salmon ascended the West River to spawn. For the past six years, groups of Dummerston middle school students have worked to restore Atlantic salmon to the Connecticut River watershed by participating in Southern Vermont Natural History

Museum's "Adopt-a-Salmon" program. Students chart the growth of salmon from egg to fry prior to releasing them into the wild in April or early May.

b. Waterbodies

Waterbodies include ponds and lakes. There are many small ponds scattered throughout Town, most of which are connected to the streams and rivers which form the Town's drainage pattern. They are not large enough to support the type of seasonal residential development associated with larger waterbodies across the state, nor are they significantly utilized for recreation.

c. Wetlands

Wetlands are biologically productive ecosystems and serve a variety of functions: retaining storm water runoff; reducing flood peaks; delaying flood crests; protecting groundwater quality; improving surface water quality by storing organic materials; chemically breaking down or removing pollutants; filtering eroded sediment; and providing habitat for a wide diversity of plants and animals; including waterfowl, birds, mammals, amphibians, and reptiles. These areas are an indispensable and fragile natural resource. They also contribute to the overall scenic landscape of Dummerston.

According to the U.S. Fish and Wildlife Service's National Wetlands Inventory maps, there are approximately 56 wetlands in Dummerston that are 3 acres or larger in size. Most of the wetlands are located near rivers, streams, or brooks, although several small isolated wetlands also exist.

The most effective way to ensure the continuation of wetland values is to protect those areas that remain. Several state and federal laws and regulations (including U.S. Army Corps of Engineers permits) provide protection for wetlands. The Vermont Wetland Rules require state review (Conditional Use Determination) of Class 1 and 2 wetlands[1] prior to the issuance of a local zoning permit. Currently, Dummerston relies on the state's regulations to protect the Town's wetlands.

d. Vernal Pools

There are many ways to define "vernal pool." It has been common to classify a wetland as a vernal pool based upon the presence of one or more "vernal pool obligate" species; species believed to depend upon fish-free habitats for breeding success in the long-term.

---

[1] As determined by the Vermont Wetland Rules, Class 1 Wetlands are determined to be exceptional or irreplaceable in their contribution to Vermont's natural heritage and therefore so merit the highest level of protection under the rules. Class 1 wetlands must be specifically designated by the Water Resources Panel of the Natural Resources Board. A 100-foot protected buffer zone is designated adjacent to Class 1 wetlands which helps protect the functions and values of the wetland. Class 2 Wetlands include most palustrine wetlands shown on the National Wetland Inventory (NWI) maps and those wetlands contiguous to mapped wetlands. A contiguous wetland is a wetland which shares a boundary with or touches a mapped wetland. A 50-foot protected buffer zone is designated adjacent to all Class 2 wetlands.

Vernal pools can also be defined as a wetland type meeting specific criteria: wooded location, isolated from other water bodies, small, shallow and seasonal. The Dummerston Conservation Commission inventory of vernal pools included all waterbodies where obligate amphibians breed. These species are: the wood frog; the spotted salamander; the Jefferson's salamander; the blue-spottted salamander; and the Jefferson's complex, a group of hybrids resulting from crosses of Jefferson's and blue-spotteds. Both Jefferson's and blue-spotteds are classified as species of "special concern" in Vermont. Jefferson's have a state ranking of S2 (rare; at high risk of extinction or extirpation), blue spotteds are S3 (uncommon; at moderate risk of extinction or extirpation). According to road crossing data gathered by the Bonnyvale Environmental Education Center, Jefferson's salamanders are more populous in Dummerston than any other town in southeastern Vermont, and, as a species approaching the northern extent of its range, may be more abundant here than anywhere else in the state. Any wetlands that host breeding populations of Jefferson's salamanders can qualify for Class II Wetland status.

Preliminary field investigation by the Dummerston Conservation Commission has shown that there are at least 130 vernal pools in Dummerston that support amphibian species, including some relatively rare salamanders including blue-spotted and Jefferson's. Both of these species are regionally threatened by habitat destruction. While this inventory and mapping effort included ponds that might not fit all definitions of "vernal pool," the Dummerston Conservation Commission gathered descriptive data for each occurrence that will allow further classification of these pools.

3. Groundwater Resources

Groundwater provides the primary supply of potable water for Dummerston residents and businesses through individual, drilled wells. There are approximately 8 small-scale public water systems permitted in Dummerston. A public water system can either be a public community system which serves residents on a year round basis (for example, that which serves the mobile home park on Route 5) or Public Non-Community which serve non-residential groups of people (for example, Dummerston School). Public water supplies are regulated by VT DEC, as required by the U.S. EPA.

Each public water system has an accompanying source protection area. The current Vermont Water Supply Rule defines a source protection area as the surface and subsurface area through which contaminants are likely to move toward and reach a collection point that supplies a public water system. Within the 200-foot radius of this primary collection area, contamination impacts are likely to be immediate and certain. Beyond that radius, source protection areas are tested and mapped to determine further sources of probable and possible contamination. Where there has been no mapping the DEC assumes a circular area with a 3,000-foot radius around the water source. Jurisdiction over the protection of public water supply sources rests with DEC.

Sources of groundwater include the unconsolidated sediment of streams and buried valleys, bedrock fractures and aquifers in the impure marble beds and in lesser amounts in surrounding units. Potential groundwater sources can be determined by sand and gravel deposit maps, but detailed groundwater mapping is the only way to determine

precisely areas of recharge, storage and transmission. No mapping of this sort is currently available.

Threats to the quality of groundwater in Dummerston include septic tanks and leaching fields, along with hazardous cleaning products, paints, lawn and garden products, and automobile products. Even properly functioning septic systems typically introduce nutrients (nitrogen and phosphorous) into the groundwater. Other potential sources of groundwater degradation include, but are not limited to: acid rain, pesticides, contaminated runoff from roads and driveways, salt storage areas, road salting, fuel-storage tanks and illegal dumping.

Water and Wetland Resources Goals, Policies, and Action Steps

Goal 1:	Protect surface and ground water quality and quantity for drinking and other domestic uses, for fish and wildlife habit, and for recreational use.

Policy 1.1: Maintain or enhance the chemical, physical and biological quality of Dummerston's surface waters.

Action Steps:

a. Support surface water classification and management strategies that will maintain or enhance existing water quality. (Selectboard)
b. Use road maintenance methods and materials such as those described in the *Vermont Better Backroads Manual.* (Highway Department, Selectboard)
c. Conduct visual surveys of streams to gather baseline data on indicators of possible degradation and study general water quality. (Conservation Commission)
d. Require retention of vegetation or effective re-vegetation of areas vulnerable to erosion during through state or local permit procedures . (Planning Commission, Development Review Board)

Deleted: Site Plan review

Policy 1.2: Provide long term stewardship of riparian habitat.

a. Development occurring on lands that have degraded riparian habitats will require restoration of these areas through natural regeneration of native riparian vegetation[2] and/or by requiring active planting of native woody species appropriate to the site in "planting zones." The developer shall guarantee plantings with a performance bond for a minimum of five years. Planting zones shall be described and designated as protected riparian habitat in common-land covenants, easements, and other appropriate legal documents in the riparian area. (Planning Commission, Development Review Board)

Deleted: by designating "no mow zones"

Deleted: No mow zones and p

[2] Riparian vegetation is a strip of land with plant ground cover bordering surface water, whether still or flowing, that acts as a protective strip between the body of water and any adjacent land use and that, at optimum, contributes to the well-being of the biota both in and adjacent to the body of water.

b. High quality riparian areas will be protected with a minimum setback and vegetated buffer of 100 feet or the 100 year floodplain, whichever is greater. (Planning Commission). This needs a definition of a "high quality riparian area". There was also some question about how this would interface with state regulations.

c. Activities that alter the natural form and function of a surface water, such as filling, dredging, damming, channelization, and removal of riparian vegetation shall be prohibited in all developments subject to review. (Development Review Board)

Deleted: and removal of large woody debris

Policy 1.3: Minimize impervious surfaces in future development.

Policy 1.4: Protect vernal pools, pool-breeding amphibians, and their upland habitats.

Action Steps:

a. Continue to inventory vernal pools and evaluate the biological value of the breeding pools and adjacent terrestrial habitat to rank the pools and create a conservation plan based on the values. (Conservation Commission)

b. Investigate the need to identify and to reclassify highly significant vernal pools as Class II wetlands so that they are protected by the Vermont Wetland rules. (Conservation Commission)

Deleted: Seek

c. Map forested dispersal corridors that connect adjacent significant pools. (Conservation Commission, Planning Commission)

Policy 1.5: Protect public water supplies.

Action Steps:

a. Require all facilities which store, process or use hazardous materials, or generate or treat hazardous wastes in their operations be sited in compliance with state and local laws, best management practices for the protection of groundwater, surface waters and air quality, and be periodically monitored for compliance with such laws and practices.

Deleted: Consider creating an overlay district to protect public drinking water sources. Prohibit industrial uses, bulk storage of toxic or hazardous materials or wastes, and other uses that have processes that can impact the water supply. (Planning Commission)

b. Work with residents and businesses to encourage individual water resource protection measures such as water conservation, proper septic system maintenance and proper waste disposal practices. (Planning Commission)

Deleted: ¶

Policy 1.6: Retain wetland areas in their natural state for wildlife habitat protection, as retention areas of surface runoff, and for habitat and scenic values.

Action Steps:

a. Establish a reliable wetlands inventory by verifying the National Wetlands Inventory. (Conservation Commission)

b. Revise the Zoning Bylaw to protect Class II wetlands by maintaining a vegetated buffer strip around the wetland edge, sufficient to ensure the integrity of the wetlands. A 100 foot buffer zone is recommended, with a minimum of 50 feet. (Planning Commission)

Deleted: an undisturbed

Mineral Resources

Granite, slate and marble were once quarried in Dummerston. However, they are not presently being excavated. Today, sand and gravel deposits, important as current or potential sources for fill, aggregate and road construction materials, are Dummerston's major mineral resources. Significant clay deposits exist in the Connecticut River Valley, and material is occasionally removed from these sites.

With a high number of unpaved roads in town, sand and gravel materials are essential to the town. In 2006, Dummerston and Putney entered into a 20-year lease agreement with a landowner to operate a sand and gravel pit from a 41.3 acre site located on Clark Road. Operation of the site is expected to result in substantial savings over market prices. Both sand for winter road maintenance and gravel for general road maintenance are excavated from the property.

There are other limited sources of sand and gravel in Dummerston. The Moore Farm pit is approximately 6 acres in size and is projected to provide sand and gravel for the next 10-15 years. Another sand and gravel pit is located east of the Moore Farm location on the east side of Interstate 91. This pit is approximately 16 acres in size. This sand is excavated and sold to surrounding towns. There is also a 5 acre pit on Station Road.

Deleted: notable

Deleted: , though the town no longer relies on them.

Exploration and discovery of future sources is of paramount importance to the town. Of special concern is gravel, where deposits containing significant material appear to be rare. Likely sources along the Connecticut and West rivers, as well as local high-level sources, should be studied for possible development with special attention given to the environmental impact of any such development.

Mineral Resource Goals, Policies, and Action Steps

Goal 1:	To identify and balance the benefits and uses of sand, gravel and other mineral and earth resources against the impacts associated with the extraction, processing and transportation of such resources.

Policy 1.1: **Investigate potential new sources of sand and gravel resources for the town.**

Policy 1.2: **Require that proposals for new earth extractions demonstrate that efforts have been made to minimize noise and any adverse impacts to air quality, surface waters, wetlands, adjacent properties, traffic on local roads and bridges, wildlife habitat and the character of the area.**

Policy 1.3: **Prohibit mining and mineral extractions in critical conservation**

corridors.

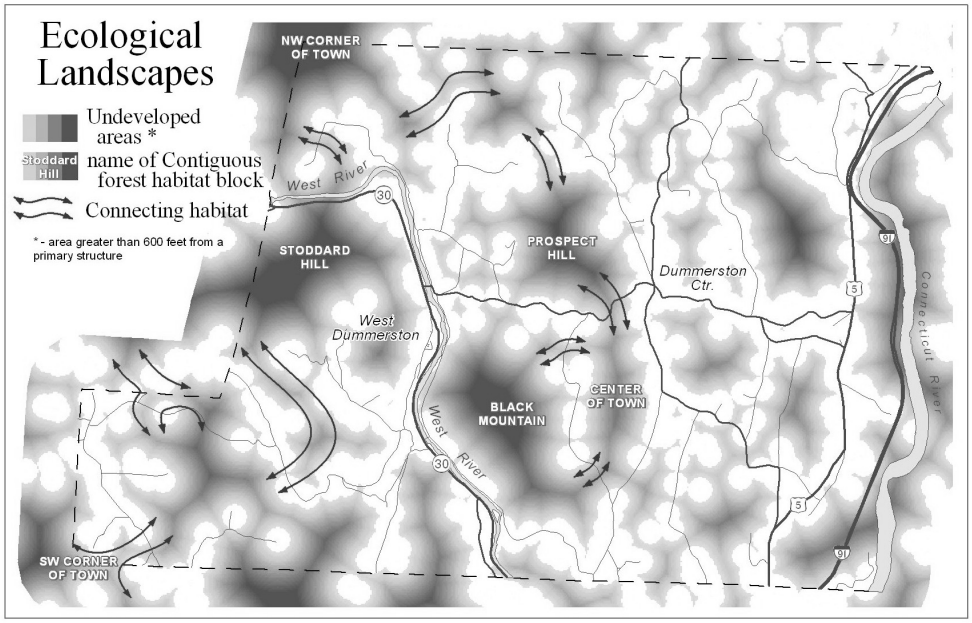
Ecological Landscape

1. Forests

Forests and woodlots comprise close to 80% of the land cover in Dummerston. Forest types include northern hardwoods, hemlock, eastern white pine, black birch-oak-hickory, a native red pine forest on Black Mountain and mixed woods consisting of hemlock or white pine with mixed hardwoods.

Contiguous forest habitat provides a significant contribution to Dummerston's interests in its natural heritage, identity and working landscape. These lands represent much of what makes life in Dummerston unique and enjoyable. These lands provide a myriad of ecological functions for fish, wildlife, plants and the natural processes that sustain them. Further, they provide extremely valuable connections for people to enjoy and appreciate the land and its abundant resources. Important ecological landscapes and contiguous forest areas that are a priority for conservation efforts are mapped on the *Ecological Landscapes* map below and include:

- Stoddard Hill, where Maple Valley is located, connects forested areas of Marlboro and Newfane and is important for bear travel;
- The terraces and floodplains along the Connecticut River;
- Black Mountain;
- The Southwest corner of Town that connects to Marlboro and Brattleboro;
- Prospect Hill;
- Silver Maple forests along the Connecticut River;
- The area south of East West Road between Middle Road and Black Mountain Road (center of Town);
- The northwest corner of Town with connections to the Putney Mountain ridge.



2. Connecting Habitat

Connecting habitat provides valuable links between larger unfragmented portions of the landscape. Connecting lands allow wildlife to travel safely across the larger landscape, disperse into new territories, find mates and shift their ranges to adjust to climate change. Undeveloped segments of rivers and streams, or any forested or brushy area, such as a fenceline or hedgerow, can serve as a wildlife corridor. Different species have different requirements for connecting habitat, so a variety of types of connecting habitat should be maintained. Important corridors for wildlife movement are shown on the *Ecological Landscapes* map and include the following:

- The area between Hague Road and Evans Road;
- The Connecticut and West rivers;
- South Branch of Canoe Brook;
- Salmon Brook; and
- Stahl-Scott Farm corridor.

3. Natural Communities

A natural community is an interacting assemblage of plants and animals, their physical environment, and the natural processes that affect them. They recur across a landscape under similar environmental conditions, where natural processes, rather than human disturbances, prevail. Natural communities can be small, such as a vernal pool community, or large, like the Northern Hardwood Forest community that forms the matrix community of Dummerston. Maintaining examples of all of Dummerston's natural communities, in sizes that will enable them to remain viable, will help us ensure that we have adequate habitat for all of the Dummerston's wildlife.

The Conservation Commission has mapped examples of twelve types of natural community in Dummerston. The Vermont Nongame and Natural Heritage Program has identified and evaluated sites where 8 exemplary natural communities occur in Dummerston. They include a Rivershore Grassland, Riverside Outcrop, Pitch Pine-Scrub-Oak Barrens, Mesic Maple-Ash-Hickory-Oak Forest, Pitch Pine-Oak-Heath Rocky Summit, Red Pine Forest, Red Maple-Black Ash Seepage Swamp, and Silver Maple-Ostrich Fern-Riverine Floodplain Forest. With the exceptions of the seepage swamp and the floodplain forest, all of the sites are associated with the West River or Black Mountain. These exemplary communities represent intact examples of Vermont native flora, fauna and vegetation.

4. Grassland Habitat and Bird Habitat

Dummerston is host to a diversity of birds. Recent fieldwork to update *The Atlas of Breeding Birds in Vermont* indicates that there are approximately 90 breeding or potentially breeding bird species recorded in blocks that were surveyed in Dummerston (each block is 25 square kilometers). Dummerston also supports some breeding species that are relatively uncommon elsewhere in Vermont including the Carolina wren, the red-bellied woodpecker and blue-gray gnatcatcher. This survey work has indicated that a number of species' populations have declined significantly over the past 30 years. Among these are the American kestrel, brown thrasher, eastern towhee, woodcock, whip-poor-will and eastern meadowlark. Some of these species depend upon undeveloped grassland habitats. Most grasslands in town are managed for hay production, which often conflicts with the nesting of these species. Fields that are not mowed until after July 15 allow these species to fledge their young. Two important field-nesting areas are the Bunker Farm (kestrels) and the Falk property (bobolinks). Other species that benefit from maintaining grasslands are some snake species, meadow voles, and the hawks and carnivores that feed on the small mammals and insects that flourish in grasslands. Maintaining a small percentage of Dummerston in grasslands will increase the health of these wildlife populations.

5. Early Successional Forest and Shrub Habitat

According to *Conserving Vermont Natural Heritage,* young trees and shrubs, often occupying disturbed sites and areas such as abandoned farm fields, provide unique and important habitat for many species of wildlife. Some species that depend on these habitats (such as the American woodcock, the ruffed grouse, the New England cottontail and the golden-winged warbler) are in decline throughout Vermont, and probably in Dummerston as well. Whereas forest can be preserved by being left alone, early succession habitats must be maintained in that condition or they will become forests. Important early succession habitats in Dummerston include:

- The summit of Prospect Hill;
- The pond and swamp on Middle Road;
- McDermet property off of Butterfield Road (maintained as early succession)
- The old ski slopes on Maple Valley.

Before European settlers arrived, these habitats were created by disturbances like storms and fires. Others were maintained by beavers. During the time this Plan has been drafted,

there are no known beaver colonies active on the streams of Dummerston. While beaver activities often conflict with human use of the land, simple technologies are available to regulate the level of water in a beaver pond.

6. Deer Wintering Habitat and Deer Browse

The deer population in Dummerston has fluctuated over time due to landscape changes. Annual *White-Tail Deer Harvest Reports* from the Vermont Department of Fish and Wildlife (2003-2007) indicate that Dummerston has a large deer population.Foresters and many woodland owners in Dummerston have observed that the deer population is now so high that deer browse is affecting the ability of the forest to regenerate sugar maple, oak and ash. Seedlings and saplings of these high value hardwoods often show signs of intense browsing, year after year. As a result, forest regeneration in the understory is often dominated by two hardwood tree species that are not preferred by deer, beech and black birch.

Over time, selective browsing can lead to a reduction in species composition and diversity as browse resistant species become more dominant. In addition to reducing the tree populations of maple, oak and ash, deer browse also impacts the diversity of herbaceous and woody plants. As understory habitat on the forest floor changes, an expected result is a decline in the diversity of wildlife, invertebrate species and insect life.

By creating more open habitat, browsing also encourages the growth of invasive plants and spreading ferns that displace native species. In some cases, dense populations of invasive plants, such as barberry, and spreading ferns (New York and hay-scented), reduce or prevent the germination of tree seedlings and create understory monocultures. These changes in forest habitat can prevent regeneration long after a deer population has been reduced.

Efforts by foresters to stimulate hardwood maple, oak and ash regeneration usually have limited success. These efforts include small clear cuts of one acre and larger to create early successional habitat and ample “deer food,” leaving dots of tops on the ground after logging to make it more difficult for deer to feed on seedlings and saplings, and growing oak trees in tubes until they are out of reach of deer.

The Woodland Owners Association in Windham County in recent years has increased its efforts to convince the State Legislature and the Vermont Department of Fish and Wildlife to change its management of deer herds by permitting more harvesting of does in an effort to reduce deer populations throughout the County.

While the deer population may need to be reduced, these animals are an important part of our natural and cultural landscape. Deer wintering areas may be an important part of maintaining a stable deer population in the long term. These hemlock glades provide relief from harsh climatic conditions by providing protection from deep snow, cold temperatures and wind chill. These habitats are characterized by a high degree of softwood cover, a favorable slope, south or westerly aspects, generally moderate elevation and low levels of human disturbance in the winter. Thirteen known deer winter

ranges are located in the Town, involving 12% of the Town's total land base. An individual wintering area may provide shelter for deer that come from a summer or fall range ten or more times its size. Consequently, changes in the winter range may affect deer population not only in Dummerston but also adjacent towns. The Camp Arden deer wintering area is believed to be of regional significance.

7. Amphibian and Reptile Habitat

Of the 40 species of reptiles and amphibians known to occur in Vermont, 24 are likely to occur in Dummerston. This includes eight salamanders, one toad, six frogs, three turtles and six snakes. In "The Atlas of the Reptiles and Amphibians Vermont," 14 of these have been documented with a photo or a specimen. It is also possible that the rarest snake in Vermont, the eastern racer, occurs in Dummerston, since a road killed specimen was found on Depot Road in Newfane. Suitable racer habitat exists in adjacent parts of Dummerston. There has also been a report of an eastern box turtle in Dummerston. This is a species that is listed as a "hypothetical species" in the Atlas, since the few individuals that have been seen might be escaped pets.

Reptiles and amphibians are especially vulnerable to habitat fragmentation since they often move between different types of habitat in different seasons. Roads pose a high risk to slow moving species. Snakes, especially, often pause in roads to warm themselves.

Important habitat for reptiles and amphibians includes vernal pools and other wetlands, streams and riparian areas, undisturbed sandy areas for egg laying, and, in the case of the eastern racer, undeveloped areas that are not mowed frequently.

8. Threatened and Endangered Species

The Vermont Nongame and Natural Heritage Program, a program of Vermont Fish and Wildlife Department's Wildlife Division, tracks rare plants and animals and exemplary natural communities in the State. Using a ranking system, the inventory assesses the rarity of species on a global and statewide level. There are approximately 18 plant occurrences that are listed as species of special concern. Of these, the state has classified as threatened (T) or endangered (E) the three-bird orchid (E), the barbed-bristled bulrush (E, also federally listed), plains frostweed (T), harsh sunflower (T), scrub oak (T), and Greene's rush (E). The Brook floater, a freshwater mussel, is the only animal species identified as endangered. The Jefferson's salamander is a species of special concern. There are several other localities known for rare species that are not recorded. Future conservation efforts should include creating an exhaustive listing of sites.

9. Invasive Species

Invasive plant species have become common in many forests, wetland, and riparian areas. They can out-compete native plants for space, nutrients and light. An "invasive species" is defined as a species that is 1) non-native to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm (Executive Order 13112). Human actions are the primary means of invasive species introductions.

There are scattered populations of Japanese Knotweed, mostly found along the West River. This invasive species presents water quality concerns due to the fact that it out-competes other vegetation and dies back in the winter, leaving shorelines susceptible to erosion because there is no other vegetation stabilizing the stream bank (Basin 11 Management Plan, Preliminary Draft 2007). Purple loosestrife is commonly seen in many riparian and wetland habitats in the region. Other species such as Oriental bittersweet, certain species of honeysuckle, Japanese barberry, yellow flag iris, and glossy buckthorn have become well established in many locations. Garlic mustard has been found along roads in Dummerston.

Elevations generally below 1,500 feet are most susceptible to invasive species, though any land with some sort of major disturbance (from wind, water, logging, or land clearing and development) could potentially host them. It may be possible to slow down or even halt the spread of these species by identifying and removing plants as soon as they appear. Early detection is the key. This detection can be aided by educating residents about the identification of and problems caused by invasive species. Several landowners have put control programs in place.

Ecological Landscape Goals, Policies, and Action Steps

Goal 1: Protect and enhance biological diversity in Dummerston.

Policy 1.1: **Protect ecosystems of and habitat of threatened and endangered species**.

Action Steps:

a. Provide information to landowners and resource managers about the various rare or threatened plants, mammals, birds and other species on their land, and how to manage for these species. (Conservation Commission)

Policy 1.2: **Provide a habitat evaluation to landowners as part of site plan review and conditional use review when the Zoning Administrator determines it's necessary. (Conservation commission)**

Policy 1.3 **Encourage the conservation and stewardship of existing contiguous habitat.**

Action Steps:

a. Develop and implement zoning regulations to encourage creative site planning that allows structures to be grouped together to minimize fragmentation of forestlands and to preserve contiguous habitat. (Planning Commission)

Deleted: Educate

Deleted: **Require**

Deleted: **Avoid subdivision and parcelization of that habitat.**

Deleted: a. . Amend the Site Plan Review process to minimize the loss of existing native trees. (Planning Commission)¶
b

Deleted: **Policy 1.4: . Ensure that animals and plants are able to move freely between conserved lands and lands under long-term stewardship, contiguous forest habitat, and other important habitats, land features and natural communities to meet all their requirements for survival by maintaining critical connections and by increasing the acreage of connecting lands.** ¶

Deleted: *Action Steps:*

b. Follow best road road management practices of VT Local Roads and VTRANS to conserve wildlife corridor functions. (Highway Department, Selectboard, Conservation Commission)

Policy 1.4: Ensure the conservation and proper stewardship of significant natural communities found within Dummerston.

Action Steps:

a. Continue to work on inventory of natural communities in Dummerston, and the mapping of all significant communities. (Conservation Commission)

Policy 1.5: Protect the functional integrity of deer wintering areas.

Action Steps:

a. Protect deer wintering areas from development and other uses that threaten the ability of this habitat to support deer. (Planning Commission, Development Review Board)

Policy 1.6: Provide information to landowners about the importance of grasslands, early successional forest, and shrub habitat to certain species.

Action Steps:

a. Provide guidelines to private landowners for the management of grasslands for birds and invasives. (Conservation Commission)
b. Consider alternatives to beaver and beaver dam removal when not a threat to roads and culverts. (Highway Department, Selectboard, Conservation Commission)

Policy 1.7: Undertake efforts to remove invasive species.

Action Steps:

a. Provide landowner education on how to identify and remove invasive species. (Conservation Commission)
b. Work with the highway department and road crew to identify and remove invasives along the roadsides. (Conservation Commission)
c. Explore funding for consultation and hiring experts to remove invasive species that are the most difficult to control. (Conservation Commission, Highway Department, Selectboard)
d. Explore a regional approach to control and removal of invasives.

Goal 2: Engage townspeople in protecting natural resources.

Policy 2.1: Update existing natural resources information and studies using the best available and most reliable sources of data.

Deleted: Adopt town
Deleted: standards
Formatted: Bullets and Numbering
Deleted: by avoiding the installation of guardrails in corridor zones, avoiding the removal of roadside vegetation, or avoiding roadside ditching in existing corridor areas.
Deleted: <#>Encourage landowners to maintain vegetated habitat along fencerows, streams, and other connecting features. (Conservation Commission, Planning Commission)¶ <#>Incorporate development setbacks from mapped corridors into town zoning regulations. (Planning Commission)¶
Deleted: 5
Deleted: 6
Deleted: Maintain and p
Deleted: all
Deleted: 7
Deleted: Maintain
Deleted: and, where appropriate, increase the acreage of this habitat within Dummerston.
Deleted: Pursue
Deleted: 8
Deleted: c. .
Formatted: Bullets and Numbering
Deleted: C
Deleted: with
Deleted: e

Action Steps:

a. Continue to conduct a systematic survey of Dummerston in order to update the community's inventory of special natural features. (Conservation Commission)
b. Prepare a Conservation Plan based on the inventory work of the Conservation Commission. (Conservation Commission, Selectboard)

Deleted: Adopt

Policy 2.2: Provide townspeople with information about environmentally sound management of land and ways individuals can assist in protecting natural resources.

Action Steps:

a. Recruit volunteers to assist when collecting data for Natural Resource inventories. (Conservation Commission)
b. Work with experts from local environmental organizations, land trusts, etc. to provide workshops and other opportunities for landowners to learn about and discuss topics such as natural resource protection, farm and forest management and land preservation. (Conservation Commission)