

2.4 WILDLIFE AND PLANT HABITAT

2.4.1 INTRODUCTION

The Town of Dennis has a strong commitment to preserving what remains of its natural environment. This includes the 402 acres of freshwater wetlands, 42 acres of cranberry bogs (note, while essentially man-made, the state now classifies cranberry bogs as wetlands and extends protections to them equal to the protections provided natural wetlands) and 976 acres of saltwater wetlands;¹ 3,902 acres of forest land, and 555 acres of other open land (pastures, cropland, etc.)². Approximately 823 acres of the Town owned 1,964 acres are devoted to conservation and are under the control of the Dennis conservation Commission.

Dennis is the ninth largest land-area town on Cape Cod. Dennis comprises 20.66 square miles of land area, or 13, 645 acres. It is bounded by Cape Cod Bay on the north and Nantucket Sound on the south. The towns of Brewster and Harwich are to the east, while Yarmouth lies to the west. The town is unusually rich in natural resources. Dunes, wetlands, forested areas, rare plant and wildlife species, and a variety of uncommon habitats, such as white cedar swamps, and kettlehole ponds are located within Town.

Much attention has recently been paid to the Quivet Neck/Crowe's Pasture area. This is one of the last large expanses of undisturbed wild land within the town of Dennis. The Quivet Neck/Crowes Pasture area comprises about 250 acres that include two significant freshwater ponds, Coles Pond and Little Coles Pond. Coles Pond at about ten acres is presumed to be a Great Pond. Coles Pond provides for about 2,800 linear feet of shore line, to which no formal access exists. It is an area which has been identified as rare vegetation habitat. Little Coles Pond is less than ½ acre in size, and contains about 500 feet of shoreline. Coles Pond and Little Coles Pond are considered to be Kettlehole ponds and as such have no inlet or outlet of water and are greatly impacted by local environmental conditions such as snowmelt and precipitation. These ponds and the habitat they sustain are extremely susceptible to the impacts of development and are in great need of protection from fill, erosion and alteration to the run-off of water and lawn fertilizers/herbicides. The presence of Plymouth Gentian, *Sabatia kennedyana*, an endangered herbaceous biennial of coastal ponds, has been documented adjacent to Coles Pond. This is a globally rare plant that is listed as being of special concern in Massachusetts and endangered in the United States. The north coast of the study area features a series of rocky promenades formed by the glaciers that extended across the north coast. The area between each rocky point is laced with narrow white sand flats. The area furthest to the east, or closest to the Town of Brewster, is called Crowes Pasture Beach. In this area the beach starts to expand into large expanses of long rolling sand flats. Quivett Creek is the coastal stream system that makes up the south-easterly border of the study area. The creek system includes a large marsh area, and includes an annual herring run to its headwaters at Bound Brook Pond. The land mass adjacent to Quivett Creek has been identified as a major Marine Water Recharge Area. Finally, the Crowe's Pasture area has been the subject of a town and state sponsored habitat restoration project. Within the

¹ MacConnell, William P. et. al., University of Massachusetts, Amherst, Department of Forestry and Wildlife, "Land Use Update for Cape Cod and the Islands with Area Statistics for 1971, 1984 and 1990."

² 1999 updated Land Use Tables from UMass-Amherst by way of MassGIS.

conservation area the town has attempted to restore a portion of the native grasslands, in order to provide a mix of habitat between the site's predominant woodland area and the coastal marsh. It is hoped that the habitat restoration project will generate an area that could support a number of species, including the Northern Harrier. Within this area, the New England Blazing Star has already made a reappearance.

Dennis's 1998 Open Space and Recreation Plan (OSRP) provides additional natural resource inventory, supplementing this and other sections of the Natural Resource Element.

2.4.2 INVENTORY

A. Wetlands in Need of Special Protection

Wetlands are areas of land which are inundated or saturated for a portion of each year. These areas tend to exhibit hydric soil conditions, and contain greater than fifty- percent wetland vegetation. Wetlands serve a variety of functions including aquifer recharge, flood control, pollution prevention, and fish and wildlife habitat. Dennis's location, geological makeup, high water table, and vulnerability to the forces of wind and water make its wetlands extremely fragile and susceptible to degradation from development and accompanying septic waste.

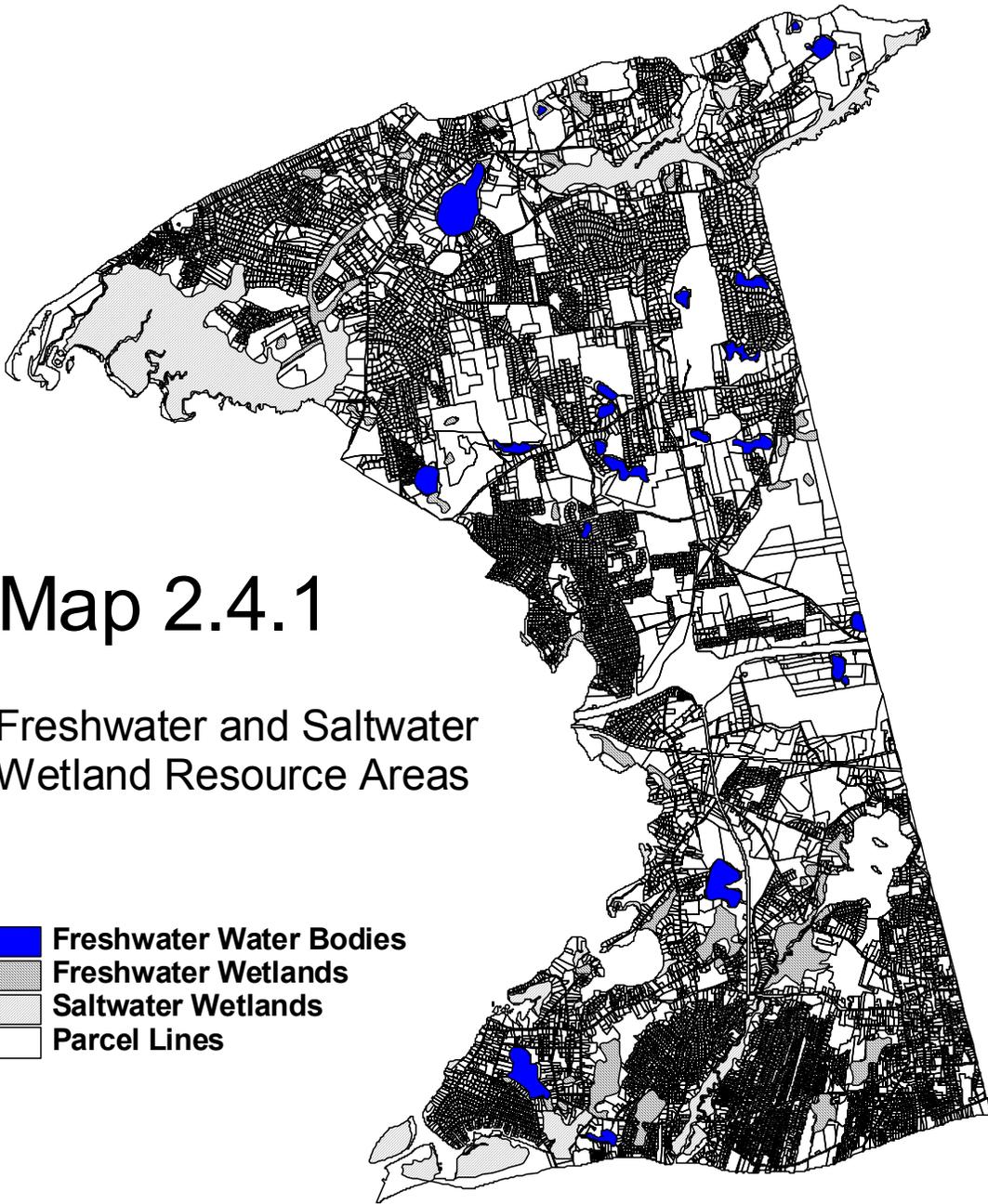
Dennis has 402 acres of freshwater wetlands, 42 acres of cranberry bogs and 976 acres of saltwater wetlands (Map 2.4.1). The salt marsh provide excellent habitat for birds, shellfish and finfish nurseries. The two largest vegetated wetland areas are the 140 acres along Swan River and 80 acres along Weir Creek. The 1990 Critical Habitats for Cape Cod identifies two Atlantic White Cedar wetland areas. These wetland areas are located around the eastern perimeter of Fresh Pond and at the headwaters of Otter Creek. These two freshwater wetlands are highly acidic and are considered uncommon for the cape. The town, through the efforts of the Land Acquisition Committee is in the process of protecting these areas.

B. Local Wetlands Protection

The Town's Wetland By-laws contain several provisions for the protection of wetlands and habitat areas. For instance:

- No septic systems are allowed to be any closer than 100 feet from any wetland as defined by M.G.L. Chapter 131 Section 40.
- In environmentally sensitive areas, mounded septic systems must be justified to both the Conservation Commission and the Board of Health before they are allowed.
- If any bank is already stabilized by vegetation, permission will not be granted to build a solid or static structure such as bulkheads, sea walls and retaining walls.
- No new enclosed structures or additions to existing structures are allowed within 50 feet from the top of any coastal bank.
- No expansion of enclosed living area or the foundation footprint of any structure or dwelling is allowed within the limit of a coastal beach or sand dune.
- Wetland replication is not allowed.

- A 50-foot setback from all wetlands is required to allow the pollutants from the structures to be acted upon by the vegetation and aerobic bacteria of the upland soils.



Map 2.4.1

Freshwater and Saltwater Wetland Resource Areas

-  Freshwater Water Bodies
-  Freshwater Wetlands
-  Saltwater Wetlands
-  Parcel Lines



In addition, the Dennis Zoning By-law definition of lot area only allows ten percent of the minimum lot area to comprise wetlands.

The town will be undertaking a comprehensive review of its zoning bylaws. This review will include identifying areas where local zoning protection of wetland and coastal resources could enhance the tools available to the Conservation Commission. Included within the measures to be studied will be shoreline protection zones, enhanced stormwater management requirements and vegetation management efforts to reduce lot clearance and intrusions into sloped areas.

C. Critical Habitat Areas

The Town of Dennis has a wide range of wetland, freshwater and saltwater based habitats supporting a diversity of organisms. The following table provides an overview of these waterbodies, which have been discussed in Sections 2.1 and 2.2

POND NAME	SURFACE ACREAGE	MAX. DEPTH (ft)	SHORE LENGTH (miles)	ACTIVITIES	ACCESS	COMMENTS
OFFICIAL GREAT PONDS: (public, surveyed by state engineer)						
Scargo Lake, D.	53	48	1.3	Trout-stocked fishing; swimming; 7.5 hp boating	Town ramp; beach	Herring run
PRESUMED GREAT PONDS: (public; surface area greater than 10 acres)						
Fresh Pond, S.D.	29	8	0.95	Skating; fishing; 5 hp boating; walking trails	Route 134 town conservation area	Cedar swamp
Kelley's Pond, W.D.	25		0.95		Town conservation area	
Flax Pond, D.	15	29	0.52	Swimming, fishing	Town conservation area	
Grassy Pond, E.D.	12		0.76		Through wellfield	Rare plants
White's Pond, E.D.	12		0.47		No formal access	
Cedar Pond, E.D.	10		0.55	Swimming, fishing	Airline Road town conservation	
Coles Pond, E.D.	10		0.53		No formal access	Rare plants
Eagle Pond, S.D.	10		0.38		Off Love Lane	
PRIVATE PONDS with Public Access: (less than 10 acres, but publicly-owned frontage or access)						
Run Pond, D.	9		0.57		Through wellfield	Rare plants
Bakers Pond, E.D.	8		0.50	fishing	Airline Rd. conservation area	Rare plants
Aunt Patty's Pond, E.D.	8		0.76		Through wellfield	Rare plants
Funn Pond, E.D.	5		0.3		Through Dennis Pines Golf Course	
Clay Pond, E.D.	5		0.28		Through wellfield	Rare plants
N. Simmons Pond, E.D.	5		0.37		Through	Rare plants

					wellfield	
S. Simmons Pond, E.D.	5		0.41		From N. Simmons Pond	Rare plants
Whittemores Pond, S.D.	3		0.28		Through town conservation area	
Cash Pond, E.D.	3		0.3		Through wellfield	
Duck Pond, D.	1.76		0.2		Through wellfield	
Baker's Pondlet, E.D.	0.75		0.2		Through wellfield	
Tiny Pond, S.D.	0.5		0.1		Through town conservation area	
SE Grass Pond, E.D.	0.5		0.1		Through wellfield near S. Simmons Pond	
NW Grass Pond, E.D.	0.4		0.1		Through wellfield near N. Simmons Pond	
The Plashes, D.P.					Through town conservation area	Manmade
Great Pond Plash, D.P.					Through town conservation	Manmade
The Reservoir					Bound Brook Conservation Area	Manmade, herring run
PRIVATE PONDS: (less than 10 acres; no public access, surrounded by private property)						
Shiverick Pond, E.D.	2		0.2		Nordbloom Estate	
Hinkleys Pond, S.D.	1		0.2		Off Hummel Drive	
Unnamed Pond, S.D.	0.4		0.1		Off Mayfair Road	
Unnamed Pond, S.D.	0.4		0.1		Off Mayfair Road	
Little Coles Pond, E.D.	0.4		0.1		Mastin Estate; connects to Coles Pond	
HISTORICAL PONDS: (ponds no longer in existence due to filling)						
Duck Pond, S.D.	-2.5		-0.3		Town landfill area	

Most of the ponds in Dennis are classic kettlehole ponds. This means that they are highly reliant on groundwater levels for both the volume and the quality of water in the pond. These ponds often expose a wide shore during the summer. The Coles Pond shoreline has been documented as hosting the endangered Plymouth Gentian.

D. Endangered, Rare and Important Species

The following endangered, rare or important plants and animals have been identified as present in Dennis according to the Massachusetts Natural Heritage and Endangered Species Program

ENDANGERED AND SPECIAL CONCERN SPECIES

(February 2000)

Plymouth Gentian (*Sabatia kennedyana*)

Wright's Panic Grass (*Dichanthelium wrightianum*)
Thread-leaved sundew (*Drosera Filiformis*)
Salt Reedgrass (*Spartina cynosuroides*)
New England Blazing Star (*Liatris scariosa*)

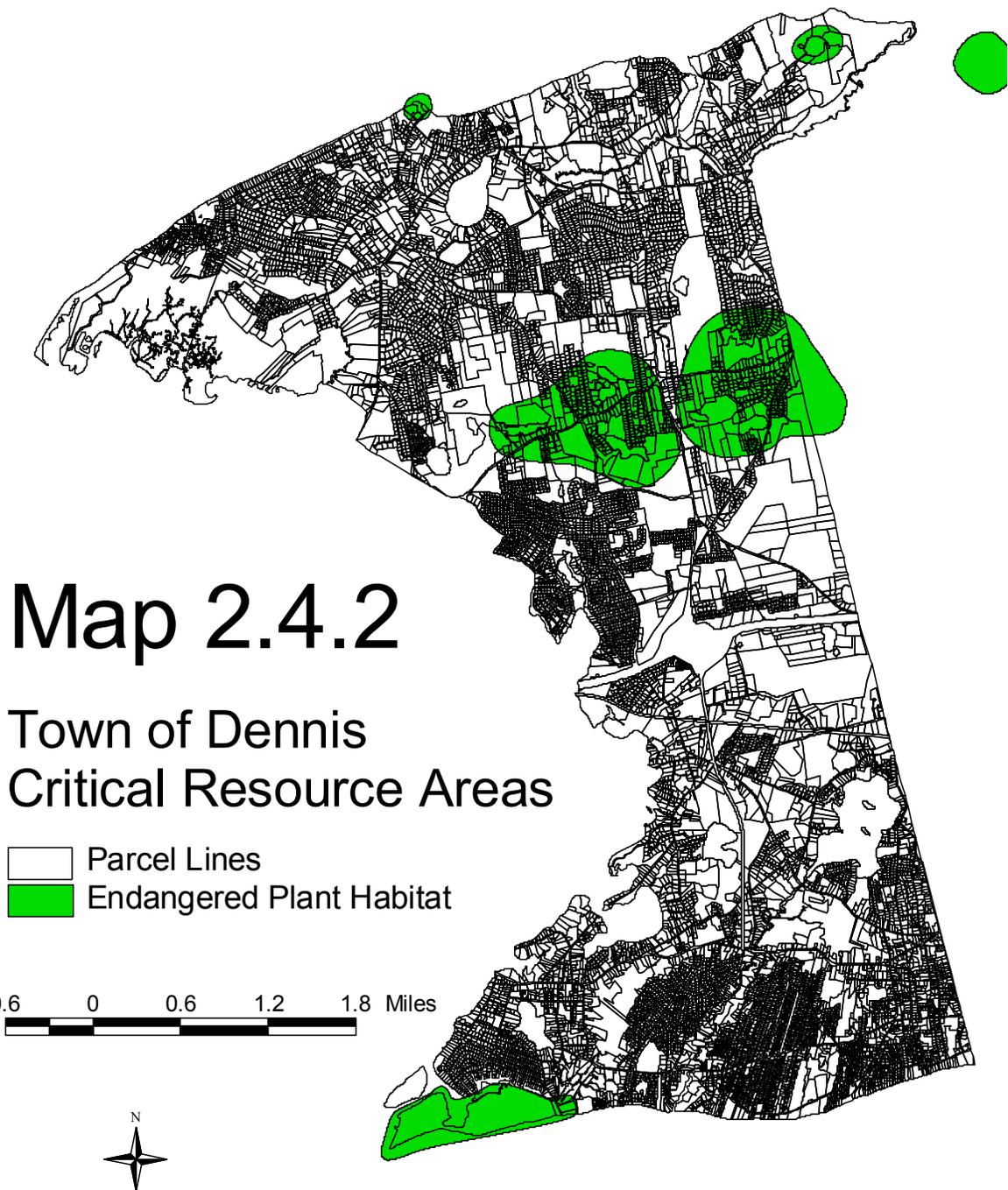
Black Ducks
Common terns
Least terns
Piping Plovers
Osprey
Northern parula warbler
Pine warbler
Orchard oriole
Eastern bluebird
Savannah sparrow
Sharp-tailed sparrow
Eastern meadowlark
Red-tailed hawk
Killdeer
Woodcock
Horned lark
Ruby-throated hummingbird
Eastern phoebe
Great horned owl
Willet
Mute swan

Eastern box turtle
Dragonflies (comet darner)
Damselflies (New England bluet, Barrens bluet)
Moths (Water willow stem borer)

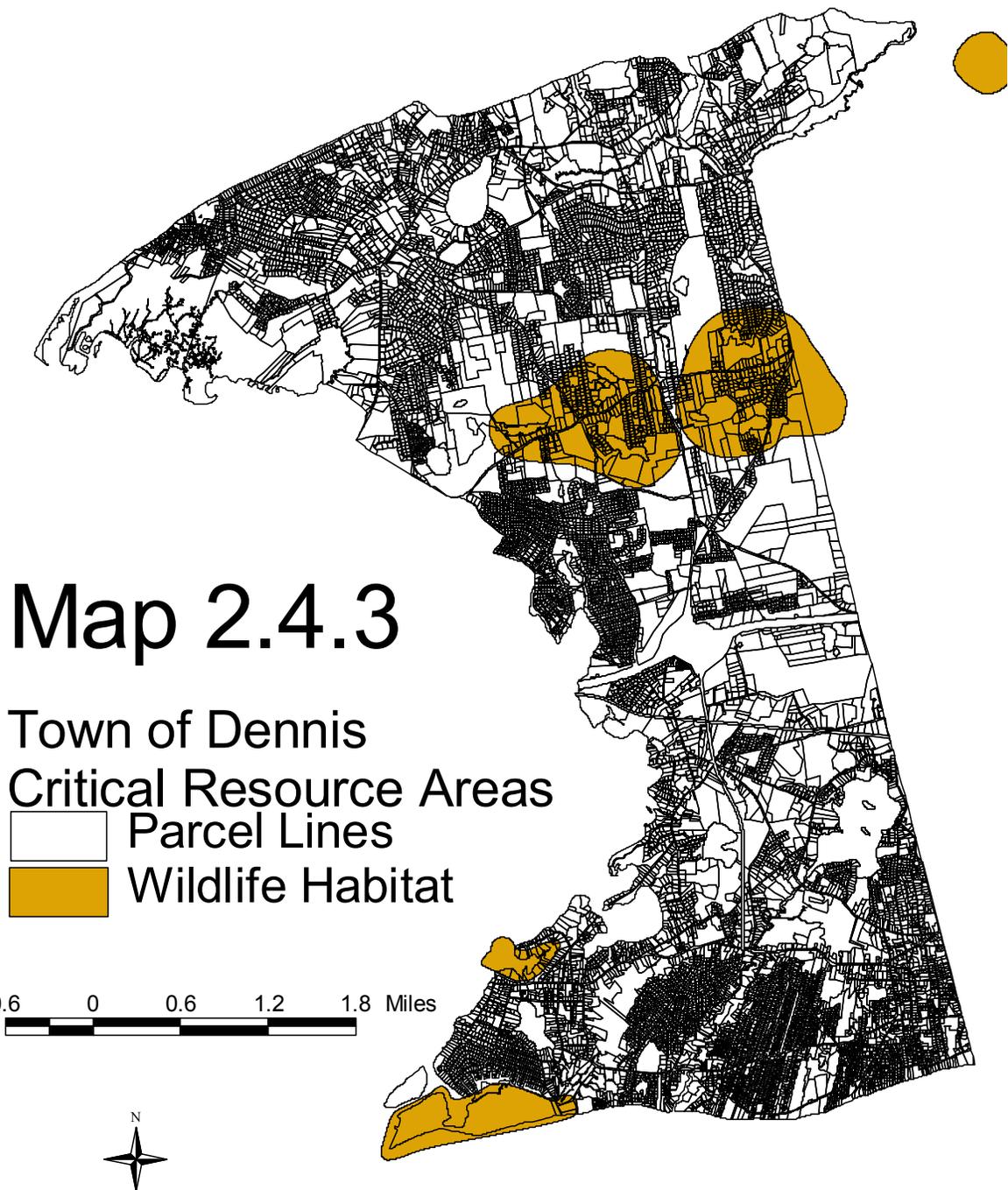
Species not specifically rare or endangered, but living in Dennis include red squirrel, gray squirrel, white-tailed deer, raccoon, red fox, rabbit, skunk, opossum, shrew, muskrat, bat, weasel, mouse, vole, and coyote. Many of these mammals rely upon the limited supply of readily available open wild-lands in Dennis.

Shellfish are also extremely important to the town. Commercial shellfish permits are issued for quahogs, soft-shell clams and scallops and blue mussels. Also present in town waters are oysters. The town has tried to enhance the shellfish stock within the town through seeding shellfish beds and developing an upweller program to raise young shellfish seed to the stage that they can withstand attack by other predatory species.

The anadromous fish population includes alewives, and herring. The major town herring runs are located in Sesuit Creek and Bound Brook. (Maps 2.4-2 - 2.4-5 illustrate these habitat areas).



Source: Association for the Preservation of Cape Cod; Dennis Open Space Plan; and Dennis Department of Natural Resources.



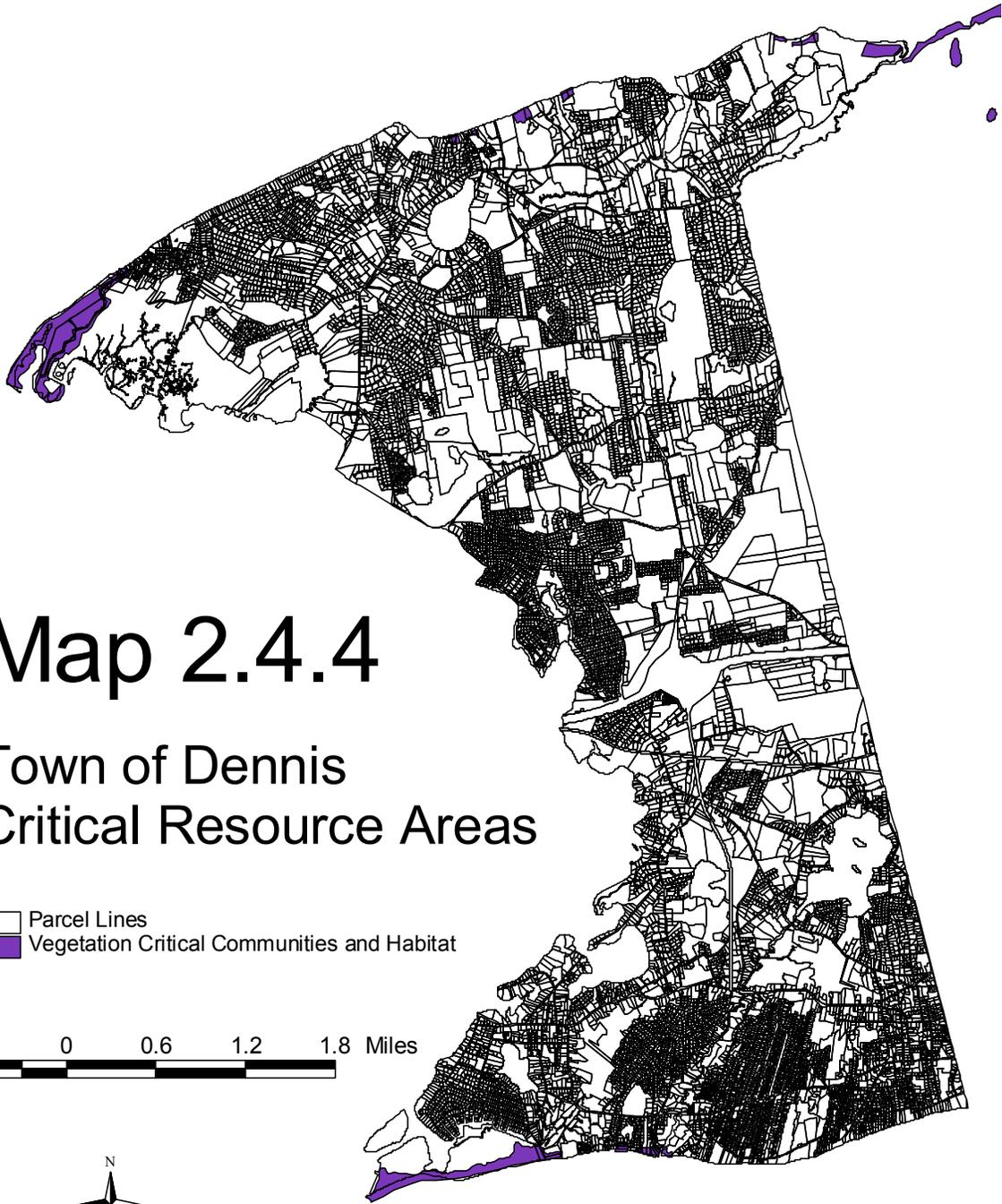
Source: Association for the Preservation of Cape Cod;
Dennis Open Space Plan; and Dennis Department of Natural Resources.

Map 2.4.4

Town of Dennis Critical Resource Areas

Parcel Lines
Vegetation Critical Communities and Habitat

0.6 0 0.6 1.2 1.8 Miles



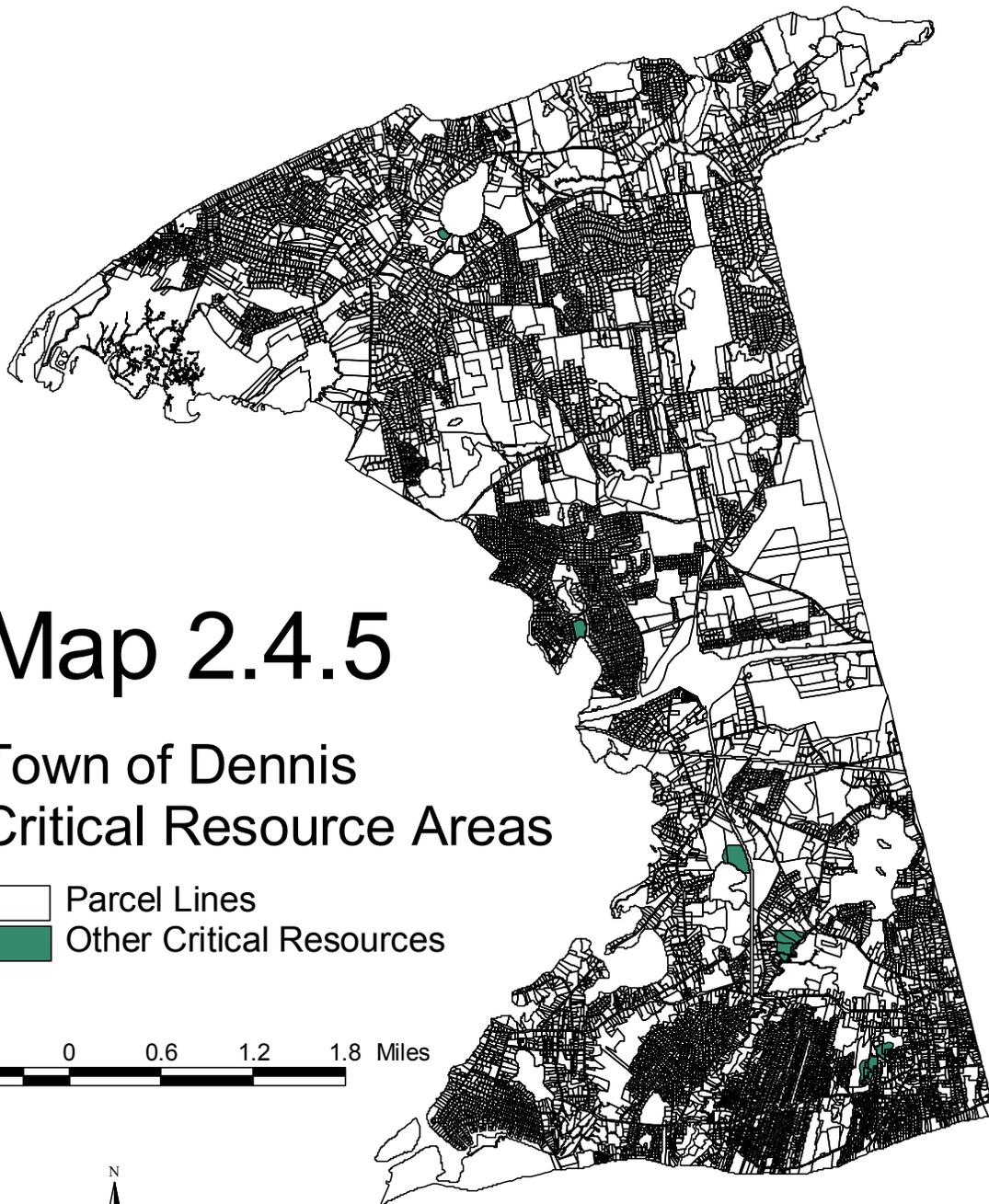
Source: Association for the Preservation of Cape Cod; Dennis Open Space Plan; and Dennis Department of Natural Resources.

Map 2.4.5

Town of Dennis Critical Resource Areas

 Parcel Lines
 Other Critical Resources

0.6 0 0.6 1.2 1.8 Miles



Source: Association for the Preservation of Cape Cod;
Dennis Open Space Plan; and Dennis Department of Natural Resources.

Map 2.4.2 illustrates areas identified by the Association for the Preservation of Cape Cod (APCC) endangered plant habitat, Map 2.4.3 illustrates areas identified by APCC as endangered wildlife habitat, Map 2.4.4 illustrates areas identified by APCC as vegetation critical communities and habitat and Map 2.4.5 are other areas of critical resources as identified by the staff of the Dennis Natural Resources Department and include among other resources stands of tupelos and white cedar marshes.

E. Vernal Pools

Vernal pools, seasonal fresh water bodies in isolated depressions, are important amphibian and invertebrate habitat areas. Not every little spring pool of standing water is a “vernal pool” but those that are have a rich diversity of life and provide significant quantities of food to large populations of animal life. Even though much of this activity seems invisible, it is going on around us and is critical to maintaining the overall ecosystem.

In order to be protected under state law, they must be mapped and certified by the Massachusetts Natural Heritage and Endangered Species Program. One vernal pool has been identified in Dennis along Beech Street in Dennis Village. Additional pools may exist but have not been mapped and certified. Vernal pools are often over-looked when reviewing development in that they are only visible for a small portion of the year. In order to properly protect these areas the Planning Board and Conservation Commission should look into regulations that require vernal pool mapping when key indicators are present of their possible existence.

2.4.3 ANALYSIS

A. Addressing Potential Land Use Conflicts with Wetlands Protection

Wetland areas are continuously threatened by development activities. High on the list of threats is the outright filling of wetlands. However, equally important is the indirect impacts of land use on wetland resources such as siltation due to runoff from urban land activities such as roads. In addition, the basic types of uses people have come to expect and enjoy, such as hiking and biking within conservation areas may harm sensitive species. For instance many areas have become popular for mountain biking, yet these activities often chew up the edges of wetlands and also lead to land compaction issues. The town needs to develop a strategy to ensure that the activities of residents, both overt (i.e. filling of wetlands) and sublime (mountain biking type activities) do not destroy these sensitive land areas.

The Regional Policy Plan for Barnstable County recommends that Cape Cod towns adopt local wetlands by-laws or ordinances that include measures to specifically protect vernal pools and isolated wetlands, enact policies of "no alteration/replication of wetlands for both public and private applicants, "expand jurisdiction beyond 100 feet where appropriate, and improve enforcement."

The RPP also recommends improved wetlands mapping and development of a definition of wetlands that is acceptable to all involved parties. The RPP suggests that the local Conservation Commission work closely with the Board of Health in implementing these measures. In

developing a local by-law that is consistent with RPP standards, the Town can work with the Cape Cod Commission to ensure that the by-law is simple and easy to apply. The Dennis Conservation Commission was established in 1964 and is one of the oldest Conservation Commissions in Massachusetts. The Commission is staffed by a full-time Department of Natural Resources.

B. Addressing Potential Land Use Conflicts with Water Quality Protection

One of the primary problems facing water quality in Dennis is wastewater disposal and related environmental and public health issues. Many portions of the town are densely developed, yet these areas, as does all of the town, still rely entirely on on-site subsurface disposal systems. The soil conditions in town, as with everywhere else on Cape Cod are not conducive to these densities of septic systems.

It is critical that the Town of Dennis continue to review its Zoning By-law and Board of Health Regulations as they relate to development density, and nitrogen loading to address the impacts that development can have on water quality. Soil-type lot sizing is one mechanism available to ensure that development densities are compatible with water quality protection. The town is comprised predominantly of poor filtration soils. In these areas wastewater from septic systems penetrate into the groundwater below with little cleansing affect from the soils. Excessive concentrations of septic systems will increase the pollutant levels within the groundwater. Such increases could force the implementation of expensive drinking water treatment facilities and/or the closure of well sites.

C. Addressing Potential Land Use Conflicts with Wildlife Habitats

As development has infringed on the few remaining open areas on Cape Cod, there is an increasing conflict between the desires of the Cape's human inhabitants and the needs of the indigenous wildlife. Illustrative of this conflict between human desires and wildlife is the plight of the Eastern Coyote. The coyote, naturally feeds on smaller wildlife such as mice, rats etc. These smaller animals are often less adept at avoiding the coyote than larger species may be. While the coyote will generally stay away from developed areas, they often cannot avoid the encroachments into their natural territory caused by development. This has led to increased conflicts between the coyote and humans. However, the coyote's behavior is not that atypical of areas where suburbanization has encroached upon and has greatly reduced the habitat available to wildlife. In the Berkshires, the stories of bears eating from the backyard bird feeder has become all too common. Racoons and skunks have moved from being denizens of the woods to often establishing very urban colonies, even within the boundaries of Boston itself.

In order to minimize the land use conflicts between man and wildlife, it is important to establish policies and programs to protect the Town of Dennis's remaining open areas. Some of the largest open tracts include the land around Cole's Pond (including the Crowe's Pasture Conservation Area), the salt marshes along Chase Garden Creek, Sesuit Creek, Bass River and Swan Pond River and the remaining forested tracts of land scattered around town. The town needs to develop policies that will encourage the protection of large areas of contiguous open space.

These areas need to ensure the protection of both upland and wetland resource areas for the benefit of the Cape's native wildlife.

D. Addressing Potential Land Use Conflicts with Endangered Species

In order to protect endangered species, it is imperative to identify and protect entire "environmental resource areas." These "areas" are tracts of land that contribute to or support a particular endangered species. Often when developing a plan to protect an endangered species many additional wildlife habitat protection benefits are also accomplished. These environmental resource protection areas include:

- The Quivet Neck/Crowe's Pasture area which supports the Plymouth Gentian. In order to protect this endangered species, the water quality and water levels in Coles Pond must be protected.
- The Barrier Beaches throughout Dennis.
- The Red Maple Swamps along Kelley's Bay, Fresh Pond and Swan Pond River.
- The significant salt marsh areas along Chase Garden Creek, Sesuit Creek, Bass River and Swan Pond River.
- The tupelos adjacent to Scargo Lake and Bound Brook. (Map 2.4-5)

Protection of habitat and endangered species should be made more explicit in the Zoning By-law and Wetlands Regulations. Consideration should be given to increasing the required lot area in proximity to sensitive resources, which could be coupled with mandatory clustering requirements. Such a two-pronged approach could both reduce the opportunity for conflict by reducing the number of inhabitants, while also ensuring the largest amount of protected open space.

Fragmentation of wildlife and plant habitat should be minimized by the establishment of greenways and wildlife corridors of sufficient width to protect not only edge species, but species that inhabit the interior forest, as well as by the protection of large unfragmented areas, and the use of open space or cluster development. Wildlife should be provided with opportunities for passage under or across roads and through developments where such opportunities will maintain the integrity of wildlife corridors.

2.4.4 GOALS AND POLICIES

2.4.1 Goal: To prevent loss or degradation of critical wildlife and plant habitat, to minimize the impact of new development on wildlife and plant habitat and to maintain existing populations and species diversity.

2.4.1.1. Applications that propose to alter undeveloped areas shall contain a natural resources inventory. Such inventory shall identify the presence and location of wildlife and plant habitat, including vernal pools, and serve as a guide for the layout of the development. Developments shall be planned to minimize impacts to wildlife and plant habitat. Natural resources inventories

shall be prepared in accordance with the Plant and Wildlife Habitat Assessment Guidelines, Technical Bulletin 92-002.

2.4.1.2. Clearing of vegetation and alteration of natural topography shall be minimized, with native vegetation planted as needed to enhance or restore wildlife habitat. Standing specimen trees shall be protected. The permitting authority may require designation of building envelopes (for structures, driveways, lawns, etc.), where appropriate, to limit removal of vegetation.

2.4.1.3 Fragmentation of wildlife and plant habitat shall be minimized by the establishment of greenways and wildlife corridors of sufficient width to protect not only edge species, but species that inhabit the interior forest, as well as by the protection of large unfragmented areas, and the use of open space or cluster development. Wildlife shall be provided with opportunities for passage under or across roads and through developments where such opportunities will maintain the integrity of wildlife corridors. Fencing shall not be constructed so as to interfere with identified wildlife migration corridors.

2.4.1.4. The Natural Heritage program has agreed to review Developments of Regional Impact proposed within Critical Wildlife and Plant Habitat Areas for the Cape Cod Commission. The Town of Dennis supports this effort, and will work with the Commission and the Natural Heritage Program to implement this portion of the Regional Policy Plan. These areas consist of habitat areas of rare (threatened or endangered) plant and wildlife species and species of special concern as generally identified and mapped by the Natural Heritage and Endangered Species Program and other critical habitat areas as identified and mapped by the Association for the Preservation of Cape Cod's "Cape Cod Critical Habitats Atlas," or local authorities. Developments of Regional Impact that would adversely affect habitat of local populations of rare wildlife and plants shall not be permitted. Development may be permitted where the proponent can demonstrate that such development will not adversely affect such habitat. A wildlife and plant habitat management plan may be required as a condition of approval when development or redevelopment is permitted in critical wildlife and plant habitat areas.

2.4.1.5 Development shall be prohibited in vernal pools and within a minimum 200' buffer around these areas. This buffer area may be increased to up to 350' unless the proponent can demonstrate that this greater buffer is not required for the survival of the vernal pool species. These areas shall not be used for stormwater management.

Other Development Review Policies:

2.4.1.6. Measures to restore altered or degraded upland habitat areas should be encouraged where ecologically appropriate (e.g. sandplain grasslands, pine barrens etc.).

2.4.5 ACTIONS & IMPLEMENTATION PROGRAM

1: Maintain accurate, appropriately scaled and accessible wetlands maps for use in local regulatory programs. Maps should include isolated inland wetlands and vernal pools.

Responsible Parties: PB, CC

Priority: H

Time Frame: On-going

2: Develop a clear and acceptable definition of the boundaries of wetlands and set a consistent standard for siting new subsurface disposal systems in proximity to these areas; Improve and retro-fit areas with failing systems.

Responsible Parties: CC, BOH

Priority: H

Time Frame: On-going

3: Continue improving the mitigation plan to address existing storm water management problems involving runoff and drainage systems adversely affecting water quality in wetlands and water bodies.

Responsible Parties: PB, CC, BOH

Priority: H

Time Frame: 2002

4: Develop a public wetlands education program, addressing the types, locations and functions of Dennis's wetlands and other critical habitats and the threats facing them.

Responsible Parties: CC

Priority: H

Time Frame: On-going

5: Educate Town officials, landowners and other citizens on land preservation options in order to ensure the protection of critical habitat areas. Methods of preservation include regulatory measures such as mandatory cluster subdivisions, major development set-asides, minimum lot size increases and the establishment of building envelopes that leave significant portions of new lots undisturbed in resource protection areas; Non-regulatory measures include fee acquisition, access easements and conservation restrictions.

Responsible Parties: PB, CC, BOH

Priority: H

Time Frame: On-going

6: Improve management of Town land holdings, paying special attention to littering, beach cleanliness, illegal waste disposal and erosion caused by dirt bike use. Dedication of specific Town holdings to conservation and clear definition of uses for other Town properties, including authority over harborfront beaches, can also help establish Town protection priorities and mitigating the impacts of degrading uses.

Responsible Parties: BOS, CC, BOH

Priority: H

Time Frame: On-going

7: Add a Development Impact Statement section to the Zoning Bylaw to ensure explicit protection of habitat and endangered species.

Responsible Parties: PB

Priority: H

Time Frame: 2002

8: Identify and certify any vernal pools within the Town in collaboration with the Natural Heritage and Endangered Species Program.

Responsible Parties: CC

Priority: H

Time Frame: On-going

9: Establish guidelines within the Zoning By-law and other wetlands regulations to include expanded wetland buffers and a prohibition of wetland replication.

Responsible Parties: PB, CC

Priority: H

Time Frame: 2003 (Conservation Commission already prohibits replication)

10: Develop a clear cutting and site disturbance by-law to protect wildlife corridors and critical plant and animal habitat.

Responsible Parties: PB, CC

Priority: M

Time Frame: 2003

11: Take advantage of state and federal funding for biodiversity or habitat restoration.

Responsible Parties: PB, CC

Priority: M

Time Frame: 2005