TOWN OF KENNEBUNK

Open Space Plan 2004

Workshop date:
8/9/2004

Public Hearing:
8/30/2004

Approved for passage to the Board of Selectman
and Town Meeting with edits:
8/30/2004

Approved by Voters at Special Town Meeting:
11/2/2004

Town of Kennebunk, Maine

July 30, 2004

Dear Kennebunk Citizen,

We are pleased to submit this draft of our Open Space Plan for the Town's consideration and future adoption.

This Open Space Plan identifies and prioritizes for planning protection purposes the Town's many natural, recreational and cultural open spaces. This plan is intended to be used to guide public and private decision-makers in developing new and enhancing existing open space lands in the community.

The Kennebunk Open Space Planning Committee has spent many meetings during the last two years gathering, reviewing, and analyzing information about Kennebunk's natural and developed open spaces and believe that the recommendations that we have included in this plan will help assure continued retention and access to our valuable open spaces.

We encourage Kennebunk's citizens to participate in the public hearing process and support the adoption of this plan.

Sincerely,

Kennebunk Open Space Planning Committee

Daniel J. Robinson, Chair
Robert Georgitis, Vice Chair
Lucinda A. Brockway
Janet Byrd (through 10/03)
Catherine Clark
Donald Gobeil
Kristen Gould
Donna Kabay (through 10/03)
David Smith
Tim W. Spahr

Edits from 8/30/2004 Public Hearing:

1. Added rough locations of farms or hay fields as located in the field
2. Added Piping Plover and Least Tern information sheets to Appendix C

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Chapter I. Introduction

A. Purpose:

A community's open space planning is an important component of an overall Town Comprehensive Plan. Parks and open spaces add to the health and wellbeing of a community and its residents. Kennebunk's developed and undeveloped open spaces provide areas for both active and passive recreation as well as wildlife habitat areas, separations between developed parts of town and important neighborhood meeting spaces.

In December 2001, the Kennebunk Board of Selectmen appointed a 12 member Open Space Planning Committee with representation from diverse interests and agencies in the community, whose mission it was to develop a plan and policy for preserving and protecting open space lands in the Town.

This plan is intended to be a working document which can be used by Town officials and boards, private citizens and other agencies who are involved in open space protection and management. This plan will provide both short term and long term strategies for conserving and protecting important open space lands in the Town.

B. Plan Development Process:

The first step in this planning effort was for the Open Space Planning Committee to begin to develop a working definition of open space. The diversity of opinion reflected on the committee produced lively discussion and debate on all topics and tasks. The first task was for the committee to agree on a working definition of open space. After much discussion, the committee members agreed upon the following definition:

> *Underdeveloped land areas that have important ecological functions, natural resources or cultural resources and that are worthy of conservation and protection.*

The next steps involved the collecting and analyzing of information about Kennebunk's open spaces and natural resources. This inventory phase utilized much of the information and mapping collected for the comprehensive planning effort taking place during the same period.

Early in the process the community planning forum provided the Open Space Committee with some public input/direction regarding the Town's open space needs. A copy of the June 1, 2002 public forum questions and group discussion results is included as an appendix to this plan as well as the January 2001 community survey results.

Based upon the open space resource inventory and much discussion and analysis of Kennebunk's long term needs, a set of goals, policies & strategies were developed by the committee, along with an open space plan map which identifies open space priority areas.

Finally, this plan identifies a variety of implementation techniques for achieving the plan goals- from voluntary participation through easements and donations- to purchasing options by the Town. Included in this section will be funding options available to the Town such as impact fees, grants which may be available and possible funding as part of the Capital Improvement Plan.

C. Consistency with State and Local Comprehensive Plans

The recommendations of this plan have been designed to be consistent with and compliment the Town's 2003 Comprehensive Plan Update as well as the State's growth management goals.

Upon completion and hearings regarding this plan, it is recommended the Open Space Plan be voted on and appended to the Town's latest approved Comprehensive Plan.

Chapter II. Community Profile and Demographics

This section provides background information regarding Kennebunk's growth and demographics. This profile of the Town's population, housing, economy and land use pattern was taken from the Comprehensive Plan Update 2003.

A. Population Trends and Projections

The Town has experienced steady growth over the past decade. Kennebunk's population grew by 31% between 1990 and 2000, from a year round population of 8,004 in 1990 to a year round population of 10,476 in 2000.

Table 1 provides population trends from 1970-2000 and shows how the growth rate has steadily increased over the past 30 years.

Table 1

POPULATION CHANGE 1990 - 2000			
Year	Town Population	Growth	% Change
1990	8004	1383	20.90%
2000	10476	2472	30.90%

Source: US Census Bureau

Another interesting demographic may be seen by looking at the Age Distribution Table below.

Table 2

KENNEBUNK AGE DISTRIBUTION				
Age	1990	2000	Change	% Change
0 to 4	522	553	31	5.9%
5 to 14	1114	1672	558	50.1%
15 to 19	514	638	124	24.1%
20 to 24	367	255	-112	-30.5%
25 to 34	1146	1046	-100	-8.7%
35 to 44	1357	1812	455	33.5%
45 to 54	898	1662	764	85.1%
55 to 64	747	1039	292	39.1%
65 to 74	589	873	284	48.2%
75 +	629	926	297	47.2%
Total	8004	10476	2472	30.9%

Source: US Census Bureau

Table 2 shows that Kennebunk has seen the greatest change (increases) in the 5-14 age group, the 45-54 age group and the 65-74 age group. These growing age groups will place different demands on open space resources in the community.

Population projections for the year 2010 are estimated to be in the range from 12,460 (1.9% per year) to 13,700 (3.0% per year).

B. Housing Trends and Projections

Kennebunk's housing growth was similar to its population growth- with a 25% increase over the past decade- from 3,985 housing units in 1990 to 4,985 units in 2000.

Residential permit trends shown in Table 3 show that between 1990 and 2001 there were permits issued for 940 single family homes, 25 duplex units and 410 multi-family units (which included 194 condos and 216 elderly congregate units.)

Table 3

RESIDENTIAL PERMIT TRENDS

Application Type	Year												Totals
	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	
Single Family (total units)	63	64	145	70	69	54	78	81	88	97	69	62	940
Accessory	*0*	*0*	*0*	*0*	*0*	*2*	*2*	*0*	*1*	*0*	*1*	*0*	*6*
Two-Family (# units)	0	0	0	0	4	0	6	0	2	2	0	11	25
Multi Family (# units)	4		4	4	8	6	16	102	54	100	44	68	410
Apartments	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Condos	*4*	*0*	*4*	*4*	*8*	*6*	*16*	*16*	*28*	*28*	*44*	*36*	*194*
*Elderly Congregate Units**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*86*	*26*	*72*	*0*	*32*	*216*
Totals	**67**	**64**	**149**	**74**	**81**	**62**	**102**	**183**	**145**	**199**	**114**	**141**	**1381**

If Kennebunk's housing trends continue based upon anticipated population growth and household growth, approximately 1200-1500 new housing units will be developed over the next decade.

C. Existing Land Use (See *Figure 1*)

Kennebunk's pattern of land use has been made up of the higher density of development within and around the three traditional villages of Downtown Kennebunk, West Kennebunk Village and Lower Village and the lower density of rural lots spread throughout the rural zones. Kennebunk is primarily a residential community- with approximately 50% of the Town's total land area occupied by residential uses. Less than 8% of land area has commercial or industrial use. Approximately 20% of the Town's land area contains some sort of public/ semi-public, open space or conservation area excluding sites of government buildings, schools and utility uses which occupy another 7% of the total area.

The existing land use map shows the breakdown of the various land use categories throughout the town based upon the 2001 assessor's records.

The approximate breakdown and number of acres of the various land use categories are as follows:

Existing Land Use (See ***Figure 1***)

Vacant & Underdeveloped		26%
Residential:		
Single Family		37%
Two-family		1%
Multi-family		4%
Commercial:		
Retail/Services		2%
Office		<1%
Restaurants/Lodging/Campgrounds		<1%
Industrial:		
Industrial/Manufacturing		1%
Wholesale/Distribution		<1%
Parks/Recreation/Conservation lands		22%
Government/Institutional/Utility		6%
Total Land Area	100%=	21,700 Total Acres

Chapter III. Open Space Resources Inventory

For the purposes of this open space planning effort, open spaces have been broken up into the following functions:

A. Natural Resources Inventory
- Water resources and Riparian Habitat
- High Value Plant and Animal Habitats

B. Recreation Resources Inventory
- Parks & Recreation Facilities (Town/MSAD 71)
- Trails
- River access points

C. Cultural Resources Inventory
- Visual/scenic areas & corridors
- Historic and archaeological sites and districts
- Agricultural lands
- Other cultural areas (i.e. cemeteries, museums, schools, libraries, neighborhood meeting spaces)

D. Existing (protected) Open Spaces Inventory
- Public/Semi Public/Land Trust/Utility

A. Natural Resources Inventory (See *Figures 2, 3 & 4)*

Kennebunk's natural resources have helped to define and guide its development pattern over the years. It's many rivers, streams, wetlands, special habitat areas and scenic corridors have added to Kennebunk's uniqueness and beauty. Identification and preservation of important natural resources has been identified by residents as an important goal for the long term plan of the Town.

Water Resources & Riparian Habitat (See *Figure 2*)
(water bodies, streams, wetlands, and riparian habitat)
Kennebunk has four major waterbodies within its boundaries- the Kennebunk River, the Mousam River, Branch Brook (the source of its water supply) and the Atlantic Ocean.

The Mousam River is the largest freshwater surface system in the Town, draining an area of over 100 square miles. The section of the Mousam River within Kennebunk is classified Class B which provides a quality level suitable for fishing, recreation, shellfish harvesting (relative to tidal portions) and for unimpaired habitat for fish and aquatic life. The major tributaries of the Mousam are Cold Water Brook, Day Brook and Fernald Brook. The mouth of the Mousam River is included in the State high value habitat maps with important tidal marsh and wildlife habitat.

The Kennebunk River forms the northerly boundary between the town of Kennebunk and the towns of Arundel and Kennebunkport. The Kennebunk River Watershed drains all three towns as well as part of Lyman. Extensive water testing of the river has been done for over 10 years and results are being monitored by both the State and the local conservation commission in order to reduce potential pollution sources. The major tributaries (in Kennebunk) of the Kennebunk River, include Ward Brook (Alewive Brook), Wonder Brook and Lake Brook/Gooch's Creek.

Branch Brook, the boundary between Kennebunk and the town of Wells, is a smaller water system originating in the town of Sanford. It is extremely important to Kennebunk as the primary source of the public water supply. The Branch Brook and its only major tributary in Kennebunk, *Slab Brook*, drain into the tidal waters of the Little River prior to reaching the Atlantic Ocean.

Alewife Pond is a Great Pond covering about 40 acres in the Kennebunk River Watershed. Old Falls Pond is a Great Pond on the Mousam River on the western boundary of town. About 40 acres of the pond is located within Kennebunk with the rest of the pond located in the town of Sanford. Both ponds have been rated by the Department of Inland Fisheries and Wildlife as having moderate fisheries value.

Wetlands

Wetlands function in Kennebunk as transitional zones between terrestrial and aquatic ecosystems. They support a diversity of wildlife and vegetation typically adapted for life in saturated soil conditions. Wetlands provide both biological and open space/ aesthetic benefits. Biological benefits include fish and wildlife habitat or nutrient export which supports productive and diverse food webs. The tidal marshes on the Little, Mousam, and Kennebunk Rivers are prime examples of high productivity wetlands. Water resource values include groundwater discharge, stream flow maintenance, flood prevention, water quality maintenance, and shoreline protection. Humans directly use and receive many cultural and economic benefits from wetlands. Recreational uses, such as nature study, hunting, fishing and boating are widely recognized. Public wetlands such as the Rachel Carson National Wildlife Refuge are designed to protect wetlands from overuse and development, while controlling public access and use. Education and research are also important functions of public wetlands, while many privately held wetlands have current or potential future value for research and education.

Wetlands also provide open space and aesthetic values. Broad tidal marshes backed by protective dunes are an important feature of Kennebunk's landscape. While not offering impressive vistas, forested wetlands present the visitor with a rich mosaic of trees, shrubs, ferns and

delicate wildflowers. Wetlands often provide open space buffers between developed areas in what otherwise might have become a continuously developed area. For example, extensive wetlands east of the Maine Turnpike have helped contribute to the growth of distinct neighborhoods separated by forest and open marshes.

Kennebunk's wetland map, prepared by Normandeau Associates in 1991 utilizing National Wetlands Inventory maps and additional state mapping, evaluates the wetland's benefits and functions. That wetlands map, at a scale of 1"=1000', is on file along with the full report, in the Town Planning office.

The principal findings of the Normandeau wetland evaluation were:

- The highest concentration of wetlands is located east of the Maine Turnpike. Twenty-eight (28) of the wetlands studied are located east of the turnpike. This includes 8 wetlands greater than 100 acres in size and 16 between 10 and 100 acres, as well as numerous small wetlands not included in the study. Of these wetlands 12 are highest priority, 12 are moderate priority, and 4 are lowest priority. This represents 75% of the highest priority wetlands and 52% of the moderate priority wetlands.

- Kennebunk's salt marshes have high regional and local significance. Salt marshes, which have exceptionally high wildlife, fisheries, recreational, aesthetic and educational values, are relatively uncommon in Maine. Kennebunk has two major salt marsh complexes (Little River and Mousam River/Back Creek) as well as smaller salt and brackish marshes associated with the Kennebunk River and Lake Brook/Gooch's Creek. These wetlands, which are highly visible, are the "Crown Jewels" of Kennebunk's wetlands.

- Wetlands within the Branch Brook watershed are highly valuable due to their contribution to the Wells-Kennebunk public water supply and to the Little River salt marsh.

- Stream-associated wetlands provide high value wildlife and water quality benefits. Relatively narrow forested wetlands along stream corridors provide key habitat for animals which require aquatic habitat for all or part of their life cycle. These wetlands also serve as travel corridors between large blocks of undeveloped land. Forested wetlands adjacent to streams also filter contaminants and sediments caused by human activities on nearby uplands. The narrow width of these wetlands is sometimes insufficient to provide water quality and wildlife habitat protection without added development setbacks in bordering uplands.

- Medium and large forested wetlands are important for wildlife and water quality. Forested wetlands east of the Maine Turnpike wetlands comprise the majority of available wildlife habitat. These wetlands are primarily used by non water-dependent species such as white tailed deer and songbirds. For forest interior songbirds, large tracts of unbroken forest are essential. As growth pressures increase, these wetlands will become increasingly important as wildlife refuges. Forested wetlands west of the Turnpike, while still supporting a high diversity of species, are less critical as refuges. Forested wetlands also provide important water resource benefits by detaining and cleansing runoff and storm water, discharging water and nutrients to downstream aquatic ecosystems, and seasonally recharging groundwater through coarse, sandy soils. As undeveloped areas, they also provide open space and recreational benefits for hunting, hiking, and nature study. The larger wetlands are less vulnerable to nearby site development but their value may be severely impacted if they are fragmented into smaller blocks by development.

100 Year Floodplains are mostly flat areas adjacent to rivers, streams, ponds and tidal waters that are an integral part of a river ecosystem. These areas serve as overflow for excess water and can become periodically flooded. They are important to Kennebunk because they act as flood buffers, water filters, nurseries and are major centers of biological life in the river ecosystem. Floodplains are important in maintaining the health of the river through water quality, habitats and breeding sites for plants and animals. They are important for maintenance of water quality as they provide fresh water to wetlands and backwaters, dilute salts and nutrients and improve the overall health of the habitat used by many species of birds, fish and plants. Important biologically, floodplain areas in Kennebunk represent areas where many species reproduce and as such are important for breeding and regeneration cycles.

Riparian Habitat consists of areas in the transitional zone between open water or wetlands, and dry or upland habitats. These areas include the banks and shores of streams, ponds, and lakes, and the upland edge of wetlands. Undisturbed Riparian Habitat is important to both water quality, because of its ability to buffer and filter runoff before it affects water sources, and to provide corridors and natural habitat for wildlife and fisheries.

High Value Plant & Animal Habitats (See ***Figure 3***) In 2001, collaborating Maine agencies and organizations[1] published *Beginning With Habitat, An Approach to Conserving Open Space*. This cooperative effort was developed to provide municipalities and organizations with a program and single source of information about fish, wildlife and plant habitats. This program provided Kennebunk with a "landscape model" of the basic framework for presenting animal and plant habitat areas. This data is intended to be used and incorporated

into the planning for conservation and open space. A large set of maps of the Kennebunk region at a scale of 1"=2000' is on file in the Town Planner's office along with the complete copy of the "Beginning with Habitats" report.

Two distinctive habitats are identified by the landscape model used by the State in their "Beginning with Habitat" effort, *riparian habitats* (as discussed above) and *high value plant and animal habitats.*

High Value Plant and Animal Habitats:
Areas of identified and mapped habitats that support endangered and threatened species are classified as High Value Plant and Animal Habitat. Mapping these existing natural communities facilitates directed growth and development away from our rare habitat types. This map contains data from the Maine Department of Inland Fisheries and Wildlife (MDIFW), The Maine Natural Area Program (MNAP), and The U.S. Fish and Wildlife Service (USFWS). For a list of the names of the species found in Kennebunk (see ***Appendix C***).

MNAP Rare or Exemplary Natural Communities:
The Maine Natural Areas Program tracks natural communities that are either rare types or outstanding examples of more common types. Communities are field-verified within the last 20 years, and are mapped and digitized at a scale of 1:24,000 and included in the "Beginning with Habitat" report.

MNAP Rare Plant Locations:
In addition to Natural Communities, the MNAP also tracks plant species that are rare in Maine. Rare plant point locations are mapped at a scale of 1:24,000 and are accurate to a 3-second radius. Rare plant habitat polygons are mapped and digitized at a scale of 1:24,000 and included in the "Beginning with Habitat" report.

B. Recreational Resources Inventory (See ***Figure 4***)

Parks & Recreation Facilities- Recreational open spaces include existing and proposed spaces reserved for passive (i.e. hiking, biking, jogging, walking and sitting) and active (i.e. ball fields, tracks, tennis courts, skateboard parks) recreational purposes. Any land that supports recreational activity, from sports fields to biking trails has been identified on Recreation Resources Inventory Map.

The Recreational Resources map (***Figure 4***) generally shows that the Downtown Kennebunk area, the Lower Village area and the West Kennebunk Village area are each served by their local municipal park. Within a one mile walk of the Downtown can be found Parsons Field with tennis courts, a playground structure, ball fields, a basketball court, a youth center and picnic area. Also located within a mile radius of Downtown is Roger's Pond off Water Street which provides a covered picnic area with a pond, fishing and canoe/kayak access to the Mousam River. Wiggins Pond off of Fletcher Street is a public park which provides

walking trails to and around the pond. Wonder Brook Park, off Plummer Street, provides walking trails down to the Kennebunk River. Rotary Park provides a riverfront picnic area and a gazebo for weekly summer band concerts and passive recreation use. The high school on Fletcher Street provides more tennis courts, ball fields and an outdoor track.

The Lower Village is served by one municipal park at the rear of the fire hall which consists of ball fields, a basketball court and a playground. The municipal beaches are also located within a mile radius of the Lower Village. However, to be fully pedestrian and bicycle accessible, sidewalk and bike lane improvements and extensions are needed along Western Avenue and Port Road. Small boat access to the Kennebunk and Mousam River is limited to the area along Route 9 at the Mousam River bridge crossing and to a small area adjacent to Durrell's Bridge on the Kennebunk River within the road right-of-way (R.O.W.).

West Kennebunk Village is served by the West Kennebunk Park on Holland Road which provides ball fields, a playground structure, tennis courts, a basketball court and a picnic area. The new middle school on Thompson Road has more recreational fields as well as indoor recreational facilities primarily for school use. Public boat access for small boats only is provided on Kennebunk Light & Power land on both sides of the Mill Street Bridge. The proposed Eastern Trail Bikeway, located along the former rail line and now owned by Granite State Gas, will soon be improved as part of a linear bikeway running from Florida to Canada.

Lloyd Nedeau Park located off Webber Hill Road on Clear Brook Crossing provides several ball fields, a basketball court, a playground and a picnic area. Although the park has good pedestrian access for residents of Cold Water Farms, use of this more remote park requires a 3 to 4 mile drive from most areas of town.

Trails

Kennebunk has two trail systems. The Town owned trail is known as the *Bridle Path* and runs from the Sea Road School along the old rail right-of-way (R.O.W.) to lower Sea Road, below the Route 9 intersection. The Bridle path is used by pedestrians, horseback riders, bikers and cross country skiers.

The *Eastern Trail* is a planned bikeway, a part of which will be running along the old rail R.O.W. in West Kennebunk. When completed it will run from Florida to Canada and will have a turnpike crossing in Kennebunk and will be owned by a variety of property owners along the route. In Kennebunk the route is owned by Granite State Gas.

Public/Semi-Public Access to Rivers

Kennebunk River access as depicted on the Recreation Resources map is limited to small boats and provided at the following locations:

- Both sides of Mousam River at the Mill Street Bridge in West Kennebunk- owned by Kennebunk Light & Power
- Lafayette Center Park at Berry Court in Downtown Kennebunk- owned by Kennebunk Sewer District

- Roger's Pond access to Mousam River in Downtown Kennebunk- owned by the Town
- Western Avenue at Mousam River Bridge- State owned R.O.W.
- Durrell's Bridge access to Kennebunk River- Town owned street R.O.W.

C. <u>Cultural Resources Inventory</u> (See *Figure 5*)

Kennebunk has its own distinctive personality, one we most often define as rooted in its village character. What is that character? Kennebunk certainly is no longer rural in the sense of having a large agricultural economy. Yet its villages and farms, its open fields and winding roads, and its seaside cottages evoke many of the images of 19th or early 20th century Maine. Throughout its development, Kennebunk has interacted and reacted to its natural surroundings. The landscape character so valued in Kennebunk today is the product of centuries of human interaction with the area's natural resources. Every social and economic change has brought distinctive new building types and traditions, nurturing and preserving some earlier patterns, transforming and obscuring others. As Kennebunk grew, its three villages expanded into the surrounding woodlands and wetlands. Farms have prospered, declined, and evolved based on the demands of Kennebunk's ever-changing market. Rivers and streams that once powered sawmills, grist mills, shoe factories and boat building companies, today provide fresh drinking water and electricity to the citizens of Kennebunk. The town's diverse and dramatic scenery has drawn summer tourists for more than a century. Whether they are captivated by our sandy beaches, our picturesque estuaries, or our historic neighborhoods, it is the Town's open spaces which remind us of the beauty and sense of place we enjoy every day through every season.

Today the pace of life leaves little time to focus on why Kennebunk's surroundings are so attractive. Yet this sense of place can be the one constant that reassures our daily lives- for its familiarity as much for its cultural and scenic value. Each of us can relate some loss or change to our surroundings, bemoaning the change or loss of our most special places. Though we intuitively know that certain landscapes are important for their visual appeal and their timelessness, we cannot specifically describe or identify those elements that articulate that special place, and we do not consider the value of their protection or preservation. These special places- the *heritage landscapes* of Kennebunk- combine people and place- they articulate the story of human interaction with the natural environment, reflecting everyday lives and activities of all of the peoples of Kennebunk. Heritage landscapes can be significant for their historic, scenic, natural, architectural, engineering or archaeological associations. Scenic qualities, in particular, are the aspects most often recognized and understood by the general public. They can include open fields and stone walls, trees, mill ponds, orchards, individual buildings and structures, entire districts or neighborhoods, civic, religious or social buildings or places, and monuments. They can be as simple as a view from a bridge, a pocket park in Lower Village, or as extensive as the Kennebunk Plains or the Alewive District's agricultural fields.

Heritage landscapes relate aspects of Kennebunk's agricultural, commercial, social, economic, industrial or ecological activities within the context of the community's history. Rather than being static reminders of days gone by, these landscapes become more significant as a lens which brings into focus our current value systems about the special places which make Kennebunk distinct, unique and different from its neighboring communities. In respecting and recognizing these tangible traces of Kennebunk's past, we are participating in the continuous transformation process of history. These heritage landscapes are really vestiges of a hybrid, ever-changing combination of what they were, how we see them today, and what they will become in the future.

We can identify several themes that shape Kennebunk's heritage landscapes. These themes interweave themselves throughout our historic past, and shape our perceptions of Kennebunk today. Each of the culturally significant spaces identified in the survey relate to one or more of these themes:

- **Settlement and neighborhood development**
- **Manufacturing (Mills) and Industry**
- **Shipbuilding**
- **Fishing and Hunting**
- **Trade and Tourism**
- **Agriculture**
- **Natural Resource Protection**
- **Art and Recreation**
- **Social, civic and religious organization**
- **Government**
- **Education**

If we use the first category as a geographic organizational tool, we can identify five distinct historic settlement areas for Kennebunk:

1. Downtown Kennebunk
2. Lower Village and Beach Area
3. West Kennebunk Village
4. Kennebunk Plains
5. Alewive Area

Each of these areas has its own unique character and its significant heritage landscapes based on their historical development of their scenic qualities. All of these have indistinct edges and there are many areas of town that do not fall into one of these distinct areas of settlement (such as the Brown Street neighborhood, Fletcher Street near the high school, Ross Road, Route 1 South, and the Cole Road/Middle Road neighborhoods). Heritage landscapes in the areas outside of these settlement areas will be identified through the other thematic categories at the end of the inventory. These distinct settlement areas are important because they relate to the growth and low-growth areas identified in the Kennebunk Comprehensive Plan and continue to be identified as areas for future development. As such, the pressures on significant heritage landscapes in these

areas will be significant, and these special places should be carefully considered as Kennebunk's villages continue to grow and change. Areas in between the distinct villages are highly important as "spines" for connecting the more densely settled villages, and "buffers" for maintaining the distinct edges of each village. As spines, these spaces are highly traveled linear landscapes that we move through every day. As buffers, these areas offer a "breathing space" between villages, and prevent the villages from moving into one another, forming one densely packed suburban community. If we look at each of these areas in light of the other cultural themes for the community, we can organize and identify both existing and future heritage landscapes within each district.

Cultural Resources Identified

- **Settlement and neighborhood development**
  - Summer Street and Landing Historic District
  - Open lots within neighborhoods for casual play (privately owned)
  - Alewive National Register Historic District

- **Manufacturing (Mills) and Industry**
  - Lafayette Center
  - Ice cutting park
  - Water Street/Factory Pasture Industrial area
  - Twine Mill

- **Shipbuilding**
  - Landing area homes and architectural remains along Kennebunk River

- **Fishing and Hunting**
  - River at Rogers Pond
  - Alewive Pond
  - Lower Brown Street
  - Ward Brook Corridor
  - Kennebunk River

- **Trade and Tourism**
  - Downtown Shopping District
  - Brick Store Museum
  - Depot building
  - Lower Village port area

- **Agriculture**
  - Summer Street, Moulton Field
  - Field at High Street and Pleasant Street
  - Farms on lower High Street
  - Alewive Road District
  - Farms/hay fields on Alewife, Cole, Ross, Thompson, and Webber Hill Roads

- **Natural Resource Protection**
  - Maine State Forest Land (High Street)
  - Blueberry Plains
  - Rachel Carson Wildlife Refuge

- **Art and Recreation**
  - Parsons Field
  - Rotary Park
  - Lafayette Park
  - Rogers Pond
  - Skateboard Park

- Wonderbrook Park
- Bridle Path
- Route 1 Rest Area

- **Social, civic and religious organizations**
  - Unitarian Church
  - Baptist Church
  - Congregational Church
  - Presbyterian Church
  - Hope Cemetery
  - Veterans Post
  - Evergreen Cemetery
  - Home Cemetery
  - Pine Grove (West Kennebunk)
  - Mt. Pleasant (York Street)
  - Masonic Lodge (West Kennebunk)
  - Pythian Building (Downtown Kennebunk)

- **Government**
  - Town Hall
  - Police Station
  - Town Landfill
  - Library

- **Education**
  - High School
  - Cousens School
  - Superintendent's Offices
  - Park Street School
  - Sea Road School
  - The New School
  - Heartwood College of Art
  - River Tree Arts
  - Middle School

D. Existing (protected) Open Spaces (see *Figure 6*)

Public/Semi Public Lands/Land Trust Properties & Easements/ Public Utility Lands/ Other

Existing Protected /Semi-Protected Open Spaces

Since 1991, there have been approximately 1074 acres added to the category of protected open space in the Town. By adding up all the open space areas in the Town, including Town owned parks, Federal lands, State lands, Water District owned, etc. there is approximately 4,200 acres or about 18% of Kennebunk's total land area which is in some way considered protected open space. The following table shows the breakdown of these open space lands by owner.

Policy 2: Develop an integrated open space and trail network which is designed to serve both active and passive recreation needs, preserve the visual quality of the area and minimize environmental impacts. [Such a network should be designed to:]

Strategy 2.A: Provide access to and connections between open spaces, public preserves, recreation facilities, parks, waterfront areas and other municipal facilities.

Strategy 2.B: Minimize potential conflicts between different user types and activity levels.

Strategy 2.C: Minimize required maintenance.

Strategy 2.D: Consider both on road and off road connections.

Policy 3: This plan understands that the Town's natural resource systems, including its' water resources, riparian habitats, and high value plant and animal habitats, are irreplaceable. The inventory of natural resources should continue to be the basis for guiding the Town's future land use pattern. The designation of areas suitable for growth and of areas to be conserved should, to the greatest extent possible, respect the identified high value resources.

Strategy 3.A: Develop a habitat priority area(s) list and map for use in encouraging donations, voluntary protection, enhancement and, if appropriate, the acquisition of high priority areas. Included in this list/ map should be the evaluation of opportunities to create greenways and corridors between parcels or to combine parcels in order to create large blocks of protected, high value habitat.

Strategy 3.B: Work to coordinate the resource protection efforts of the Town, the KKW Water District, the Kennebunk Land Trust, the Kennebunk River Committee, Rachel Carson Wildlife Refuge, and other resource related groups.

Strategy 3.C: Provide information and outreach to landowners regarding habitat protection, retention, and improvement and create incentives for property owners who carry out such measures.

Strategy 3.D: Revise/ update the Town's future land use plan to incorporate the high value plant and animal habitat areas [per the State's *Beginning with Habitat* 2001 Report] into the designated "low-growth" areas.

Policy 4: Respect for the varied cultural landscape patterns of the community is considered a high priority by the Town.

Strategy 4.A: Develop design standards which will enhance both residential and commercial neighborhood character and will retain the varied landscape patterns found in different parts of town. Develop land use standards which support the retention and creation of agricultural use. Design guidelines will allow villages to retain their distinct cores, while allowing each village to grow while retaining its own distinct character.

Strategy 4.B: Consider developing "gateway" landscape designs for the major entries to the Town which should attempt to enhance that first impression that one gets when coming to Kennebunk.

Chapter V. Open Space Plan Priority Areas

This section of the Open Space Plan will guide the Town's Boards and Officials in implementing the open space goals, policies and strategies identified in Chapter IV.

One of the most challenging tasks of the Open Space Planning Committee was to determine the value to the community of the many open space resources – including the environmental resources, the recreational resources and the cultural resources in the community.

Through the Committee's lengthy discussions on valuing open space resources, the group observed that many peoples' favorite places are small escapes –examples of open spaces. It may be a tree in the back yard, a little higher grass area near a favorite playground– it's these tiny spaces that were perhaps enjoyed early in life as a child that affects your attitude about open space preservation. It became clear to the Committee as we started to look at the Town, that the best we could do would to be able to develop a plan that would provide every resident an opportunity to access and enjoy some means of open space, be it a pocket park, a trail, or a larger forest or field –some way of experiencing the natural environment.

It also became clear that as the population of our community ages, a lot of open space that we will end up experiencing will be what can be seen from the roads. And as the downtowns and main streets become more congested with automobile traffic, we are likely to need to experience those remaining streetscapes even more so. Important open spaces are therefore not just areas that you can walk through or to, or that you can park near and then go walk through, but are also what you can see from the edge of the road.

As questions arose about the philosophy of the whole community – what makes Kennebunk a livable community, the Committee attempted to look at open space planning as not only buying and preserving land for protection, recreation and cultural value, but also for providing connections between existing open spaces and identifying open spaces to connect to in the more developed areas. It's also important to think of open space as a landscape between the built environments, and as habitat for walkers and hikers as well as wildlife.

Ratings of Open Spaces:
The compilation of this open space rating system is shown on the full size overlay maps which accompany this plan and which are included (in reduced form) in this chapter.

The open space areas and ratings have been mapped by the same categories as noted in the inventory/mapping, i.e., Environmental, Recreation, and Cultural.

In determining what values to place on each of the identified open space resources the Committee utilized the goals, policies, and strategies contained in Chapter IV of this plan. In addition, the Committee created the following system for rating the open space areas:

A. **Environmental Priority Areas** (see *Figure 7*)

- High Value Riparian Habitat Corridors
- High Value Water Resources
- High Value Plant and Animal Habitat Corridors

For these environmental open space areas identified on the map, the Open Space Planning Committee looked at the resource value in relation to the level of protection (if any) and the potential vulnerability from development and/or use. The current degree of protection of the resource and the degree of potential vulnerability to the resource by development was rated as follows:

1. **High Value/High Vulnerability/Limited Protection**
2. **High Value/Moderate Vulnerability/Limited Protection**
3. **Moderate Value/Moderate Protection/Less Vulnerability**

The Committee has determined that these areas identified on the map are the priorities for protection as additional open space lands, that is, they are *all* priorities. The map differentiates between the areas only to the degree of *highest, higher and high* levels of priority protection, if prioritization is needed for any future decision making.

Summary of Environmental Priority Areas:

Branch Brook Corridor:

The western boundary of Kennebunk is Branch Brook, with its headwaters located in Sanford south of the municipal airport, and traveling and defining the border between Wells and Kennebunk. The Branch Brook is the water source for the residents of Kennebunk, Kennebunkport, and Wells, through the KK&W Water District.

- ***High value riparian habitat corridor:*** ***Rating 1***

The western most regions surrounding the Branch Brook have many rare habitats, which include communities of designated rare species of plants and animals. The Maine Natural Area Program (MNAP) has designated this area *Freshwater Forested and Non-Forested Wetlands*. These natural habitats are further designated *Outwash Seepage Forest*. This area also includes habitat designated *Sandplain Grassland*, habitat which supports many rare species and natural communities.

The mouth of the Branch Brook terminates into the Little River/Atlantic Ocean and is estuarine saltwater habitat. Maine's Endangered Species Act protects *Essential Wildlife Habitats*, which are areas currently or historically providing physical or biological features essential to the conservation of an Endangered or Threatened Species in Maine and which may require special management considerations.

- ***High Value Water Resource:*** ***Rating 1***

North and west of York Street/U.S. Route 1, Branch Brook serves as the primary source to tributaries of the Branch Brook will help to ensure the quality and quantity of the Kennebunk, Kennebunkport and Wells Water District. The protection of lands near this important groundwater resource is critical to promoting the health, safety and general welfare of the residents in these municipalities.

- ***High value plant and animal habitat corridor:*** ***Rating 3***

The western reaches of the Branch Brook and the surrounding habitat consist of designated *Rare Species* and *Natural Communities* of ecological value. Species in the corridor include but are not limited to the following: *Upright Bindweed, White-Topped Aster, Northern Blazing Star, Grasshopper Sparrow, Ribbon, Snake, Upland Sandpiper, Wood Turtle*

Blueberry Plains Area near Branch Brook:

The Blueberry Plains and the immediate surrounding areas are owned by the State of Maine. These lands stretch from just outside the Cold Water Farms development, to the boundary with Sanford, along Old Falls Pond and the Mousam River to the power lines, and then back to Webber Hill Road to the Cold Water Farms development.

The Grass, Shrub, and Bare Ground of the Blueberry Plains adjacent to the Branch Brook are designated *High Value Habitat* for USFWS Priority Trust Species. Priority Trust Species include all migratory birds, anadromous/catadromous and certain coastal fishes, and federally listed endangered and threatened species.

- *High value plant and animal habitat* *Rating 3*

Rare Plant Habitat
Rare Animal Habitat: Upland Sandpiper

Additionally, there are rare species in these areas including, but not limited to: *the Northern Black Racer, Barrens Chaetaglae, Eastern Joe-Pie Weed, Slender Blue Flag, Smooth Winterberry Holly, and Upright Bindweed.*

Branch Brook /Little River Estuary:

The estuary at the Branch Brook's terminus is called the Little River. This estuary contains the only undeveloped barrier beach and salt marsh in southern Maine with a tidal inlet. The Little River is formed by the convergence of two freshwater brooks, the Merriland River and Branch Brook, into a tidal marsh-estuarine ecosystem. The dominant land cover of the Little River watershed is a softwood/hardwood mix, covering over 83% of the land. As of 1991, only 6% of the watershed land area was developed, but in recent years the watershed has experienced increased development pressure.

The MBLR watershed is important to freshwater, estuarine, and marine fish, as well as diadromous fish that migrate between the sea and inland waters. Wells NERR researchers have identified 45 finfish species in the watershed. Branch Brook is considered exemplary southern Maine habitat for native fish in the salmon family (such as brook trout), and the Merriland River has abundant high quality spawning habitat for rainbow smelt and river herring. The Little River is an important feeding ground for juvenile striped bass, and anecdotal reports describe sea run brown trout and Atlantic salmon taken from its channels.

- *High value riparian habitat corridor:* *Rating 1*

The mouth of the Branch Brook at its terminus with the Atlantic Ocean is Estuarine Saltwater/Habitat. Maine's Endangered Species Act protects Essential Wildlife Habitats, which are areas currently or historically providing physical or biological features essential to the conservation of an Endangered or Threatened Species in Maine ands which may require special management considerations.

- *High value plant and animal habitat:* *Rating 3*

Piping Plover and Least Tern Habitat
Rare Plant Habitat, mouth of Branch Brook
Deer Wintering Area

Kennebunk River Corridor:

The Kennebunk River marks the eastern boundary of the Town, separating Kennebunk from Arundel and Kennebunkport. The interior portion of the river rambles through old farm fields and high-value grass and shrub habitat west of the Maine Turnpike, then forest habitat between the Maine Turnpike and Route 1. The tidal portion of the river is important tidal waterfowl and wading bird habitat.

- *High value water resources, riparian habitat corridor:* *Rating 1*

The riparian habitat corridor of the Kennebunk River is designated *High Value Habitat for USFWS Priority Trust Species*. Priority Trust Species include all migratory birds, anadromous/catdromous and certain coastal fishes, and federally listed endangered and threatened species

- ***High value plant and animal habitat corridor:*** ***Rating 3***

Species in the corridor include but are not limited to the following:

Wood Turtle
Small Reed Grass
Significant grass, shrub and bare ground habitat exists throughout the corridor, primarily in the northernmost part of town between the Alewive Pond deer wintering area and the Maine Turnpike.

East of the turnpike, the river's course is surrounded by habitat categorized Forest and Forested Wetlands by the *Beginning with Habitat High Value Plant and Animal Map.*

Ward Brook/Alewive Pond Corridor:

Ward Brook flows from Alewive Pond to the Kennebunk River through rural wetlands of the northernmost section of the Town. Alewive Pond is surrounded by the 582 acre Alewive Woods Preserve, owned and managed by the Kennebunk Land Trust. The remaining parcels, through which Ward Brook flows however, are owned privately.

- ***High value water resources, riparian habitat corridor:*** ***Rating 2***

Forest and forested wetlands
Freshwater wetlands

- ***High value plant and animal habitat corridor:*** ***Rating 3***

Species in the corridor include but are not limited to the following:

Alewive Pond Deer Wintering Area
Spotted Turtles have been observed within one mile of Alewive Pond.

"Punky Swamp" Corridor:

Located between the east side of the Maine Turnpike, Ross Road, and the Kennebunk River, "Punky Swamp" includes a large wetland area and a portion of Ward Brook corridor.

- ***High value water resources, riparian habitat corridors:*** ***Rating 2***

The wetland habitat of "Punky Swamp" is field verified Natural Resource of Statewide significance. Maine's Natural resources Protection Act was intended to prevent further degradation or destruction of certain natural resources of State Significance. Within the Act are provisions for protecting Significant Wildlife Habitats, which includes the Waterfowl/Wading Bird habitat in this area as indicated on the *Beginning with Habitat High Value Plant and Animal Map.*

- ***High value plant and animal habitat corridor:*** ***Rating 3***

The Maine Department of Inland Fisheries and Wildlife (MDIFW) has mapped this habitat and classified it as a "Waterfowl/Wading Bird Habitat" and confirmed species in

this location. This is the largest 100-year floodplain in Kennebunk according to the FEMA maps.

Wonder Brook Corridor:
Wonder Brook begins northwest of Route 1 and east of Merrifield Drive. Much of the brook has been diverted and buried in culverts where it passes under Route 1. This has been done to accommodate the commercial and residential development in the vicinity. Once Wonder Brook leaves this area, it returns to its natural course and passes through an undeveloped area between Summer Street and the railroad corridor before joining the Kennebunk River.

- ***High value water resources and/or riparian habitat corridor*** ***Rating 2***

High value habitat for USFWS Priority Trust Species is found east of Merrifield Drive and west of Route 1. This habitat consists of Grass, Shrub, and Bare Ground. To the south of Route 1, Wonder Brook leads into similarly categorized habitat, consisting of Forest and Forested Wetlands. Wonder Brook has been significantly impacted by the development in the Suburban Commercial district surrounding Route 1, with much of piped from the Wonder Brook condominiums under Merrifield Drive, Route 1 and to daylight again near Shopper's Village.

Lake Brook/Gooch's Creek Corridor:
Located near Lower Village, Gooch's Creek is the estuarine habitat buffered from the Atlantic Ocean by Gooch's Beach. Lake Brook is a tributary to Gooch's Creek, and runs in a northeasterly direction, across Western Ave. to Heath Road. The area has substantial residential housing development near the beach, with little preserved open space.

- ***High value water resource and/or riparian habitat corridor:*** ***Rating 1***

The marsh area surrounding Gooch's Creek and the Kennebunk Beach neighborhood consists of *Significant Wildlife Habitat of Statewide Significance* as mapped by MDIFW and MNAP. These Habitats include *Shorebird Habitat*, specifically for migratory shore birds as a coastal staging area, and *Tidal Waterfowl and Wading Bird Habitat*, consisting of habitat for breeding, migration/staging, and wintering. Wading Bird Habitat also includes feeding, roosting, loafing, and migration areas.

- ***High value plant and animal habitat corridor:*** ***Rating 2***

The rare plant species and natural community of *Saltmarsh False-Foxglove* has been field verified in the Gooch's Creek and Lake Brook marshes.

Mousam River West Corridor:
West of the downtown Kennebunk, the Mousam River meanders through one of the least developed regions area of Town before passing West Kennebunk Village. From the border with Sanford, the Mousam River is dammed as Old Falls Pond, and then travels through a narrow corridor north of the Blueberry Plains. This leads to "lagoon" like habitat as the river approaches West Kennebunk Village and then finally Kennebunk Village after passing under the turnpike.

- ***High value water resources, riparian habitat corridors:*** ***Rating 2***

Much of the land surrounding the Mousam in this corridor is classified as wetlands. This is especially true between Old Falls Pond Dam and Twine Mill area.

- ***High value plant and animal habitats corridor:*** ***Rating 2***

The banks of the entire length of the Mousam River from Old Falls Pond to the Maine Turnpike are classified as Forest and/or Forested Wetlands. The USFWS has classified the surrounding habitat as High Value Habitat for Priority Trust Species. The Maine Natural Areas Program (MNAP) has classified portions as containing Rare or Exemplary Natural Communities

Forest and forested wetlands
Freshwater forested and Non-forested wetlands; Outwash Seepage Forest

Pale Green Orchis habitat
Spotted Turtle habitat
Wild Garlic
The Eastern Box Turtle has been identified west of Old Falls Pond and its habitat likely includes the Corridor.

Cold Water Brook Corridor:

A tributary to the Mousam River in the westernmost part of Town, Cold Water Brook begins near the Sanford line and travels in a northeasterly direction until it meets the Mousam River, just east of Old Falls Pond. Much of the land surrounding the brook is protected in one way or another. Much of the land it travels is in conservation easement, owned by the State, or owned by the nature Conservancy.

- ***High value water resources, riparian habitat corridor:*** ***Rating 3***

Field Verified Natural Resources of Statewide Significance:
Upland Forests/Woodlands/Barrens; Grasslands

High Value Habitat for USFWS Priority Trust Species:
Forest and Forested Wetlands; Grass, Shrub, and Bare Ground

- ***High value plant and animal habitats corridor:*** ***Rating 3***

Sandplain Grassland
Upland Sandpiper

Day Brook Corridor:

Day Brook begins at the Blueberry Plains, south of Webber Hill Road/ Route 99 and flows southerly north of Maguire Road and then High Street until it joins the Mousam River north of Route 1 near downtown.

- ***High value water resources, riparian habitat corridors:*** ***Rating 2***

The lands surrounding Day Brook west of Wakefield Road up through to the Blueberry Plains are abundant with high value habitat for USFWS Priority Trust Species. This habitat consists of Grass, Shrub, and Bare Ground. To the east of Wakefield Road all the way to Kennebunk Village the corridor consists of similarly categorized habitat, designated Forest and Forested Wetlands.

- ***High value plant and animal habitats:*** ***Rating 3***

Pitch-Pine Scrub Oak Barrens
Sandplain Grassland
Blanding's Turtle
Upland Sandpiper
Flowering Dogwoods
White-Topped Aster
Upright Bindweed

Mousam River East Corridor:

This corridor includes the lands surrounding the Mousam River from the Maine Turnpike bridge, through downtown Kennebunk to the Route 9/Western Avenue bridge. The river winds through a more developed section of town, with significant residential development currently above the east bank, and potentially along the west bank, which is within the Village Residential (VR) Growth Area.

- ***High value water resources, riparian habitat corridors:*** ***Rating 2***

Forest and forested wetlands
Freshwater forested and Non-forested wetlands; Outwash Seepage Forest

- ***High value plant and animal habitat corridors:*** ***Rating 3***

Pale Green Orchis habitat
Spotted Turtle habitat
Wild Garlic
The Eastern Box Turtle has been identified west of Old Falls Pond and its habitat likely includes the Corridor.

Mousam River /Back Creek Estuary :

From the Route 9/Western Avenue bridge over the Mousam River one can see much of a vast estuary and marshland of the Mousam River convergence with small Back Creek and the Atlantic Ocean. This is perhaps one of the most beautiful areas of Town, with ecology of the highest importance.

- ***High value water resources, riparian habitat corridors:*** ***Rating 1***

Field Verified Natural Resources of Statewide Significance: Estuarine/Saltwater Habitat

- ***High value plant and animal habitat corridors:*** ***Rating 1***

MDIFW Mapped Habitats and Confirmed Species Locations
Significant Wildlife Habitat: Maine's Natural Resources Protection Act (NRPA) was intended to prevent further degradation or destruction of certain natural resources of state significance. Within the Act are provisions protecting Significant Wildlife Habitats:

Shorebird Habitat
Migratory shorebird coastal staging area habitat for shorebird feeding and roosting meeting the requirements during migration as set by MDIFW.
Tidal Waterfowl/Wading Bird Habitat

B. Recreation Priority Areas (See *Figure 8*)

Summary of Recreation Priority Areas:

- Parks and Recreation facilities (Town/M.S.A.D. 71)
- Trails and connections
- Water access points (boats)

For these open space areas identified on the map, the degree to which there are such active and passive facilities of the three villages (Downtown Kennebunk, West Kennebunk and Lower Village) and the Webber Hill Road/Cold Water Farms area have good pedestrian access, and/or have an identified need for expansion or improvement to serve Town's growth areas

1. **No access-limited and/or no facilities**
2. **Good facilities – improved access needed**
3. **Safe walkable access to variety of facilities**

Downtown Kennebunk Area:

- ***Parks and Recreation facilities*** ***Rating 3***

Facilities in Downtown Kennebunk were determined to be adequate for existing needs, however, if possible, future facilities, if needed, should be located here to utilize the central location and the existing sidewalks for pedestrian access. The Committee believes there is a need for "pocket parks" and additional neighborhood open spaces in the area.

- ***Trails and connections*** ***Rating 2***

A critical link between the downtown and the Bridle Path is missing. There is a need for a trail connection from the Bridle Path to the downtown. Rogers Pond Park needs better signage for awareness and directions from the downtown (perhaps signs should be located downtown).

- ***Water access points*** ***Rating 1***

North of the downtown dam there is access to the Mousam River at Ice Park; however there are no facilities and parking is limited. Rogers Pond Park provides access to the Mousam River south of the dam.

Lower Village Area:

- ***Parks and Recreation facilities*** ***Rating 3***

Facilities in Lower Village are currently adequate. There remains a need for "pocket parks" and additional neighborhood open spaces in the village area, perhaps with water access.

- *Trails and connections* ***Rating 2***

The Town of Kennebunk owns the old right-of-way for the railroad that leads from Lower Village to Lake Brook and use to connect to the Bridle Path. Reconnection of this piece to the existing Bridle Path would provide a pedestrian/bike trail to the beach area and continue on to Downtown Kennebunk. A connection to a proposed trail along the Kennebunk River north and south was also identified as a need for Lower Village.

- *Water access points* ***Rating 1***

There are currently no public, formal, safe facilities or access points to the Kennebunk River in Lower Village for kayaks, canoes, or small boats. Acquiring and developing access and facilities is a top priority.

West Kennebunk Village Area:

- *Parks and Recreation facilities* ***Rating 3***

With the additions of the new Middle School and the new Elementary School, along with the existing West Kennebunk Park, parks and facilities are currently adequate. The Committee believes there is a need for "pocket parks" and additional neighborhood open spaces in the area.

- *Trails and Connections* ***Rating 2***

The yet to be improved Eastern Trail and the private Gary Pike Trail off of Twine Mill Road are the extent of a trail network in West Kennebunk. A connection from the existing Eastern Trail to the new Elementary School is a logical recommendation of the Committee. The Committee finds a need for a trail from West Kennebunk Village along the Mousam River to the Blueberry Plains and Old Falls Pond. Such a trail would provide important natural and recreational experiences for the residents of West Kennebunk and the entire Town.

- *Water Access Points* ***Rating 1***

Currently there is access to the Mousam River from West Kennebunk Village on the east side of the bridge off of Twine Mill Road. The access is limited to smaller boats and the facilities and parking are limited to just a few cars. The Committee had identified a need to improve access and parking for people accessing the river at this location.

Webber Hill Road/Cold Water Brook Area:

- *Parks and Recreation facilities* ***Rating 3***

The Lloyd G. Nedeau Memorial Park includes several ball fields, a basketball court, a playground and a picnic area. The facility is next to the Cold Water Farms community and the Blueberry Plains state lands.

- *Trails and Connections* ***Rating 2***

Some trails exist in the Blueberry Plains area, but connections by trail(s) to the Mousam River, and West Kennebunk Village along the Mousam River are recommended.

- *Water Access Points* ***Rating 1***

Presently there are no public water access points in this area. The Committee suggests working with the State and the Cold Water Farms community to study the feasibility of a water access point and if possible to develop an access point for small boats to Old Falls Pond and the Mousam River with appropriate facilities.

C. **Town Character Priority Areas:** (Cultural, Historic and Visual characteristics) (See *Figure 9*)

Cultural landscape: definition
Cultural landscape is a term used to describe special places created by human interactions with the environment that help define the character of a community and reflect its past.

Summary of Town Character Priority Areas:

- Historic and Cultural Value
- Visual Corridors
- Scenic Value
- Neighborhood spaces
- Heritage Landscape Value
- Agricultural and Forest resource value

For these open space areas identified on the map, the degree to which the landscapes & facilities provide opportunities for daily cultural exchange and the degree to which the open space(s) foster a sense of place and community. Again, the degree to which the resource needs further protection and/or greater accessibility has been included in the rating as follows:

1. **High Value, limited or no protection.**
2. **Additional resources protection and/or access needed.**
3. **Good resources, good access or additional access connections needed.**

Downtown Kennebunk Area:

Historic and cultural value ***Rating 3***
Additional protection of the downtown historic commercial district is needed.

Visual Corridors ***Rating 2***
The Summer Street Historic District currently serves as an adequate measure for protecting the aesthetic visual qualities of the area. However the Committee felt that Summer Street and the downtown should be identified as a high priority visual corridor.

Scenic Value ***Rating 2***

Neighborhood spaces ***Rating 2***
Pocket parks and neighborhood spaces with connections are recommended as parcels are developed or redeveloped.

Agricultural and Forest Resource value ***deemed Not Applicable***
(The Committee agreed that no agricultural or forest resources were present in the downtown area and therefore this ranking was Not Applicable)
Lower Village Area:

Historic and cultural value *Rating 3*
Additional protection for the historic commercial district is recommended.

Visual Corridors *Rating 1*
The Committee has identified the following Visual Corridors on the map and recommends preserving and protecting the lands and the characteristic that make up this Visual Corridors near Lower Village:

Kennebunk/Kennebunkport Harbor of the Kennebunk River
Beach Avenue along the Atlantic Ocean
Western Avenue– from the Wells line to the Bridle Path
Brown Street—from the railroad bridge to Western Avenue
Parsons Beach Road

Scenic value *Rating 2*
Needs for preserving scenic value are stated in Visual Corridors above.

Neighborhood spaces *Rating 2*
Pocket parks and neighborhood spaces with connections are recommended as parcels are developed or redeveloped.

Heritage Landscape Value *Rating 2*
Webhannet Golf course, Snug Harbor Farm, Hill Crest Golf, etc.

Agricultural and Forest Resource value *deemed Not Applicable*
(The Committee agreed that no agricultural or forest resources were present in the Lower Village area and therefore this ranking was Not Applicable)

West Kennebunk Village Area:

Historic and cultural value *Rating 2*
Old Eastern Railway (Eastern Trail), Post Office, Masonic Hall, Pine Grove cemetery

Visual Corridors *Rating 2*
The Committee has identified the following Visual Corridor on the map and recommends preserving and protecting the lands and the characteristics that make up this Visual Corridor near W. Kennebunk Village:

Thompson Road – West Kennebunk Fire Hall to Alewive Road

Scenic value *Rating 2*
Needs for preserving scenic value are stated in Visual Corridors above.

Neighborhood spaces *Rating 3*
Pocket parks and neighborhood spaces with connections are recommended as parcels are developed or redeveloped.

Heritage Landscape Value *Rating 2*

Agricultural and Forest Resource value *deemed Not Applicable*

Webber Hill Road/Cold Water Brook Area:

Historic and cultural value *Rating: 1*
Highly valued farms, between Wakefield and Webber Hill Road, including the old Stuart Farm.

Visual Corridors *Rating 2*
The Committee has identified the following Visual Corridor on the map and recognizes that the lands comprising the Visual Corridor are already protected.

Webber Hill Road -- Blueberry Plains

Scenic value *Rating 1*
Recognizing that much of the area is already protected, the Committee ranking is to underscore the areas *High Value.*

Neighborhood spaces *Rating 3*
Although not a village area, pocket parks and neighborhood spaces with connections are recommended as parcels are developed or redeveloped.

Heritage Landscape Value *Rating 2*

Agricultural and Forest resource value *Rating 2*
The area is well protected, however access is limited

Route 35/ Alewive Road Area:

Historic and cultural value *Rating: 1*
Lower Alewive National Historic District

Visual Corridors *Rating 1*
The Committee has identified the following Visual Corridor on the map and recommends preserving and protecting the lands and/or the characteristics that make up this Visual Corridor along Alewive Road:

Alewive Road Corridor - Cole Road to Thompson Road

Scenic value *Rating; 1*
Needs for preserving scenic value are stated in Visual Corridors above.

Neighborhood spaces ***Rating: 2***

Although not a village area, pocket parks and neighborhood spaces with connections are recommended as parcels are developed or redeveloped.

Heritage Landscape Value ***Rating: 3***

Agricultural and Forest resource value ***Rating: 3***

D. **Summary of the Highest Value Open Space Needs Areas**

From the rankings above, the following areas were identified as the highest priority areas for additional Open Space. These areas had the most Environmental, Recreational, and Cultural/Town Character attributes important to the Open Space goals of this plan.

Branch Brook Corridor

The Branch Brook serves as the water supply for the water district of Kennebunk, Kennebunkport and Wells. The Branch Brook defines the southwestern boundary with Wells. Committee members ranked the brook of Highest Value with regard to Environmental Priority Areas, and recognized that some protections are already in place to protect the water districts supply. Although the Kennebunk side east of the brook is already zoned as *Branch Brook Aquifer Protection* zones, there remains a highest level need for additional protection from development and associated environmental impacts to ensure the quality of the communities' water supply. The Committee also has identified the need for a trail in the corridor which would connect existing conservation lands in the western end of the town near the Branch Brook (Blueberry Plains and the Mousam River) with conservation lands in the eastern part of town near the ocean. A trail connection to the Proposed Eastern Trail (along the old Eastern Railroad right of way) would provide a linkage to additional open space of recreation and cultural value. The Committee also suggests formal small boat access facilities off of Route 9/Western Ave to the Little River –the part of the Branch Brook that meets the Atlantic Ocean.

Mousam River West Corridor (West Kennebunk area)

This priority area includes sensitive lands surrounding the Mousam River from just west of the Maine Turnpike to Old Falls Pond at the Kennebunk-Sanford-Lyman border. The Committee determined that the natural features of this corridor are of Highest Value while connectivity to the Village of West Kennebunk is a Highest Priority. The Committee has determined that a connecting trail for non-motorized recreational use between Old Falls Pond and the Proposed Eastern Trail in West Kennebunk would provide needed recreational opportunities. This trail could link West Kennebunk Village to the existing open space lands near the Blueberry Plains and Old Falls Pond. Committee Members agreed that the *Mousam River Greenway Plan*, or at the very least,

aspects of the plan, should be revisited and implemented for the development of such a trail. Additionally, the Committee has identified the need for improved water access (ranked 2: *limited and/or no facilities*) at the boat launch off of Mill Street. Improvements should include improved launch area, expanded parking, pedestrian access, and sidewalks to the village.

Alewive Road Corridor

A drive out Alewive Road from the southbound interchange with the Maine Turnpike reveals open, historical agricultural landscape found no place else in Kennebunk. These Visual Corridors rank Highest Value and the Committee agreed that the corridor remains highly threatened by development. Members felt that the former agricultural lands and their associated farms and forests were of highest value and with the least protection. Lands which make up this visual corridor should be considered highest priority for open space preservation. Additionally, access to these lands is limited for open space and recreational uses. The Committee recommends trail connections through additionally protected conservation land in the corridor between the *Kennebunk Land Trust's* lands surrounding Alewife Pond to an access area with parking along Alewive Road. This trail and conservation land should be connected to the Kennebunk River Corridor trails mentioned above.

Brown St – Parsons Beach Rd. – Rt. 9 Corridor:

Back Creek and the Mousam River mouth area were ranked Higher Value with moderate vulnerability/limited protection by the Committee with regard to Environmental Priority. The surrounding area is well protected and mostly under the control of the US Fish and Wildlife Service (Rachel Carson National Wildlife Refuge). Adjacent lands are a natural continuation of the conservation efforts in this area of Town. Distinct marshlands, wetlands, rare plant habitat and deer wintering areas are throughout the vicinity. Because of its proximity to Downtown Kennebunk and Lower Village, the Committee recommends the development of unimproved trails through the corridor with the exception of an improved trail parallel to Brown Street. Such a trail could substitute for the more urban sidewalk in providing a pedestrian connection between downtown and Parsons Beach Road. Exploring the possibility of reviving Harts Road as a trail is

recommended since it is essentially an existing trail. The existing visual corridors traveling Brown St. (canopy formed by trees) and the visual openings to tidal marshes and the Mousam River along Western Avenue/Route 9 were recognized as important Town Character areas which should be preserved.

Kennebunk River Corridor:

The Kennebunk River forms the northeastern boundary with Kennebunkport and Arundel. Near the mouth of the river, one of the earliest settlements was formed and has evolved into what is now known as Lower Village in Kennebunk. The village area on the east bank is actually part of a separate town, Kennebunkport. The port area shares the harbor area of the Kennebunk River in common and remains an important cultural, recreation area with a natural environment that is heavily influenced by the presence of human settlement. Just up the river from the present day bridge are the sites used for shipbuilding from colonial times through the late 19th century. The Kennebunk River in the harbor area has been identified by the Committee as a visual corridor important as open space in keeping with the historic character of a port. The Committee has identified the lands adjacent to the length of the Kennebunk River from the Franciscan Monastery to the Lyman border as of High Value, High Vulnerability and with Limited Protection. The Committee therefore recommends the permanent protection of lands adjacent to the river incorporating a recreational bike and/or hiking trail. Such a trail would provide pedestrian/recreational access through protected open space from Lower Village to the Eastern Trail, and onward northwest to the Alewive area.

a federal tax deduction. Conservation easements are less expensive than fee simple ownership and can serve to protect a property's natural resources and open space values while, in some case, providing public access.

> **Purchased Development Rights (PDR)** are voluntary legal agreements that allow owners of land meeting certain criteria to sell the right to develop their property to local government agencies, state government, or to a nonprofit organization. A conservation easement is then placed on the land. This agreement is recorded on the title to permanently limit the future use of the land to agriculture, forestry, conservation, or other open space uses.
>
> **Transferred Development Rights (TDR)** are enabled by local ordinances that create *sending areas*, or preservation areas, and *receiving areas* where communities encourage additional growth and development. Landowners in the *sending area* receive *development right credits* which they can sell in exchange for not development their land. Real estate developers, speculator, or the local unit of government can then purchase the *development right credits* and use them to increase existing or planned densities in *receiving areas.*

Density Transfer Fee

A fee in lieu of a transfer of Development Rights program, this program provides for a fee to be collected upon issuance of a building permit for a new dwelling unit that was made possible by Town up zoning (a zone that allows higher density). The fee is based upon density credits given from prior density allowed plus open space credits. The proceeds are spent to purchase existing development rights of high priority open space lands

Donation

This technique is the least expensive means of acquiring land for outdoor recreation and open space uses. Landowners can donate almost any property right or interest in their land, including the entire parcel, or as a conservation easement. Tax deductible contributions can be in the form of a lease, easement, or outright title to a piece of property.

> **Donated Conservation Easements** are voluntary legal agreements between a landowner and a local government, land trust, or agency that allow landowners to permanently limit or prohibit development on their property. Conservation easements run with the title so that all future owners of the land are bound by the original agreement.
>
> **Donated Easements** can also be used to provide limited trail access for recreation purposes. Because of their versatility easements are a valuable implementation tool.

Eminent Domain

Eminent domain is the power or a governmental body to condemn private land for public purposes upon payment of just compensation. This is traditionally a method of last resort.

Fee Simple Acquisition *(Ownership)*

Fee simple acquisition is a common way of acquiring public lands for recreational uses or for permanent open space preservation. The landowner is given a sum of money for all rights to a specific piece of land or property. This mechanism allows the public agency to have full control over a property's future. When the Town, owns all the rights to a

piece of land and holds title to it, this is called fee simple or fee title ownership or owning land in fee. Complete ownership provides full control over the land and thus the most certain ability to protect the conservation resources on the property while allowing some level of public access. However, owning land is usually costly and requires the owner to assume liability for accidents or injury on the property and the maintenance and protection of its resources.

Fee Simple/Leaseback
This acquisition option allows the Town to purchase and obtain full title to a specific property and then lease the property back to the previous owner or another designated lessee. Natural resource and open space values are protected through restrictive easements or a covenant limiting future development, income is received through leaseback while liability and management responsibilities are assigned to the lessee. The land must be appropriate for leaseback (e.g. agricultural).

Land Banking
The land bank, which can be set up as a part of local government or a self-governing entity, can purchase land and then sell it for conservation, open space, or recreational purposes. Proceeds from the sale of land could be used for subsequent purchases. Initial financing could be provided through grants or the issuance of bonds, or compensation fees provided in lieu of open space dedications.

Lease
Leasing of property provides temporary control over land in cases where the landowner either cannot or does not want to make a more permanent arrangement. This technique provides for the conservation, open space, or recreational use of land for a designated period of time but without fee simple acquisition. An easement of lease can be written to allow or restrict public access and use of private land. Restricting access can encourage the preservation and creation of scenic views. Leasing typically gives exclusive access rights to the property thereby ensuring protection of on-site resources on an annual or term basis.

Management Agreements
A management agreement specifies a plan under which the property will be managed, either by the landowner (with the advice or assistance of the land trust) or by the Town itself. Such agreements are usually recorded and remain in force for their full term even if the land changes hand. This method is used extensively by the Nature Conservancy, among others.

METHODS THAT BUY TIME

Bargain Sales

The sale of land or an interest in land below fair market value is known as a Bargain Sale. The difference between the sale price and the appraised fair market value may qualify as a tax deductible, charitable donation for the seller thereby reducing or eliminating the disparity and creating a valuable negotiating opportunity.

While most transactions involve taking full ownership of a property or conservation easement when the terms are finalized and the necessary documents are signed, other agreements such as bequests and remainder interests result in ownership at some future date.

Bequests

When donating by bequest the landowner leaves rights to a property including fee ownership, an easement or other asset to the Town in his or her will. While the donor does not receive any income tax benefits since the gift does not take place until the donor dies, estate taxes are significantly reduced for the donor's heirs by removing the value of the donation from the taxable estate.

When dealing with the donation of a conservation easement, the Town is advised to negotiate the exact terms of the donation during the donor's lifetime to ensure that the conservation resources are protected, that the trust is given sufficient management flexibility and, where possible, that adequate management and monitoring funds are donated as well. The downside of donations by bequest includes the uncertain date of acquisition and the possibility that a landowner will change their will.

Fair Market Value Purchase

Purchasing land or interests in land such as conservation easements at fair market value is the most expensive acquisition method.

Methods to Acquire Title

This method determines how much would be paid to acquire the property rights and when those rights accrue to the buyer.

Option to Buy

A written agreement purchased from or donated by the landowner giving the Town the exclusive right to purchase a property under certain terms and condition- and at a specified price, by a certain date. To strengthen the land trust's claim, these agreements should be recorded with the Town and at least a token sum paid. Acquiring an option gives the Town time to raise funds when a property is put on the market and threatened with imminent development. The Town may also acquire a series of options that expire sequentially to allow it to acquire an expensive property over a period of time and thus avoid an all-or-nothing proposition: if the trust fails to obtain adequate funds to exercise one of the options, it still retains ownership of those parcels it had already purchased.

Right of First Refusal

An agreement between the landowner and the Town that gives the right to match any

bona fide purchase offer made on the property acceptable to the landowner within a specified time period after the offer is made. The Town is under no obligation to make an offer on the property.

E. Regulatory Techniques

The Committee recommends incorporating language into the Zoning Ordinance that will facilitate the recommendations and protections for the priority areas identified in this Plan.

F. Potential Funding Sources

Land Bank
Impact Fees
Open Space Fund in Capital Improvement Plan
Density Transfer Fee

Financing Open Space Acquisition
Open space financing of land and easement purchases can be achieved through three basic methods:

1. Private sector (individuals, foundations, and corporations);
2. Government funding; and
3. Using market forces to finance the acquisition.

Land trusts for example, finance more than two-thirds of their acquisition costs on average by fundraising from the private sector. More established land trusts with some sophistication and credibility, are adept at securing government funding which may provide an essential element of the trust's acquisition program when such funding is available.

Land trusts can access government funds in a variety of ways. They can acquire land and resell it to government agencies. They can nominate and advocate particular properties to be purchased with public funds, and help raise local matching funds required by government programs. Public agencies will often loan funds or make grants directly to land trusts for land purchases and to develop access and restore wildlife habitats.

Foundations:
Funds are often available for the acquisition of Open Space, or at least technical assistance on how to acquire funds from the following groups:

Maine:
Libra Foundation

National:
The Conservation Fund
The Trust for Public Land

State:

Land for Maine's Future --Tim Glidden, Program Director
Maine Coast Heritage Trust

Federal:

Federal Land and Water Conservation Fund
The major source for acquisition at the federal level is the Land and Water Conservation Fund (LWCF). The LWCF program provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities. The program is intended to create and maintain a nationwide legacy of high quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources across the United States. Each year, Congress appropriates funds from revenue received from offshore oil development to various federal projects such as national parks, forests, and wildlife refuges. In addition, a specific portion of the funding is usually allocated among the states for state and local projects that meet certain criteria. The LWCF is authorized to provide up to $1 billion a year for the federal acquisition of open space lands, and federal grants to states and localities for recreation land purchases and facility development. Recently however, annual appropriations have hovered around $100 million dollars, with FY 2004 equaling $92 million. In FY 2003 Maine's share of the appropriation was $925,366. While none of this funding can be allocated directly to them, land trusts may seek to have the state use LWCF money to purchase lands the trust has reacquired or pursue the political process to have the state directly acquire a targeted property. LWCF funds provided to state or local government for the acquisition and development of open space and recreational areas require a 50-50 match in state or local funds which the land trust can help raise.

Intermodal Surface Transportation Efficiency Act (ISTEA, TEA21, TEA3)
Federal transportation funds for recreational facility development can be obtained through several TEA21 programs. While renewal of TEA21 (TEA3) by Congress has not yet occurred (as of July 2004), previous congressional approval for extending associated enhancement program funding ensures that at least some funds will be available in the future

G. Education

Realization of the goals of the Open Space plan requires an informed and empowered community. Continued dialogue with the community is recommended to educate and involve citizens who will be the ones who make the recommendations of the plan a reality.

H. Incentives:

Farm and Open Space Tax Law (Maine Title 36 M.R.S.A., Sections 1101 – 1121 as amended by PL 1999, c. 731

Maine Tree Growth Tax Law (Maine Title 36 M.R.S.A., Section 571 – 584-A. PL 2003, c. 30 (amd)

Notes:

[1] The Beginning with Habitat publication was a collaborative effort between the Maine Department of Inland Fisheries and Wildlife, Maine Natural Areas Program, Maine Audobon Society, Maine State Planning Office, United States Fisheries and Wildlife Service, Maine Cooperative Fish and Wildlife Research Unit

Appendices:

A. January 2000 community survey results.
B. June 1, 2002 public forum questions and group discussion results
C. *Beginning with Habitat Study (2001)* habitat/species fact sheets
D. *Open Space Committee rankings: Value, Threat, Protection, Access, Connectivity*

APPENDIX A.

A. Comp. Questionnaire Results

JANUARY, 2000 Results
Nov. 1999 Kennebunk COMMUNITY SURVEY

SUMMARY OF THE RESPONSES TO 1000 SURVEYS

PART 1. Please place a check mark (√) next to the one answer which best describes how you feel.

1. With respect to future residential growth in Kennebunk, do you think that:
   - 452 (a) The Town should limit the amount of new residential development;
   - 466 (b) The Town should neither encourage nor discourage residential growth, but should be primarily concerned with directing it to appropriate locations where public services and utilities are available;
   - 44 (c) The amount of new residential development should be controlled by the real estate market; or
   - 24 (d) The Town should actively encourage new residential development.

2. With respect to future business and industrial growth in Kennebunk do you think that:
   - 247 (a) The Town should limit the amount of new business and industrial growth;
   - 463 (b) The Town should neither encourage or discourage business/industrial growth, but should be primarily concerned with directing it to appropriate locations;
   - 70 (c) The amount of new business and industrial development should be controlled by market forces; or
   - 236 (d) The Town should actively encourage new business and industrial development.

3. Are Town's land use regulations (such as zoning, subdivision, and site plan review ordinances):
   - 143 (a) They are too restrictive in telling property owners what they can and cannot do with their land;
   - 579 (b) They strike a good balance between the need for regulation and property owners' rights; or
   - 192 (c) They are too lenient and do not provide enough protection for the public.

Does the Town do an adequate job of enforcing its present land use regulations?
598 Yes 192 No

5. Should commercial and industrial properties be required to conform to landscape and architectural standards that are consistent with a small town atmosphere?
949 Yes 40 No

6. Should more land in Kennebunk be set aside exclusively for office parks, industrial parks, or other commercial development?
385 Yes 550 No

7. Does the Town adequately provide for the housing needs of Kennebunk's low and moderate income households?
470 Yes 328 No

8. Should all new residential dwellings be charged an impact fee to help defray the cost of public infrastructure improvements, such as schools, traffic and recreation?
602 Yes 357 No

). Are user fees a good way to cover the cost of additional services, (i.e., parks & recreation trips, dump services, beach stickers)?
738 Yes 220 No

0. Should the Town consider expanding the Historic Preservation Overlay District to include additional areas?
403 Yes 457 No

If yes, which areas _____.

Is the Town doing an adequate job protecting the Town's rivers, marshes, and other areas of scenic beauty and environmental importance?
665 Yes 218 No

12. Would you support (through the use of a portion of your tax dollars) the purchase of land or conservation easements as a means of protecting such natural areas?
726 Yes 190 No

13. Do you feel that Kennebunk's local elected and appointed officials are responsive to citizen's concerns?
631 Yes 160 No

14. Do you feel that the quality of service provided by Kennebunk Town Employees is:
736 Good 178 Fair 10 Poor

15. Please rate your overall satisfaction with each of the following public services. Place a check (√) next to the appropriate rating for each service. *Please provide additional comment regarding services that you rate "poor".

		Good	Fair	Poor*
a.	Street maintenance/repair	539	329	52
b.	Police Protection	824	98	13
c.	Fire Protection	872	52	0
d.	Ambulance/Rescue	821	59	2
e.	Recreation services/facilities	653	218	29
f.	Trash pickup	839	79	9
g.	Recycling pickup	771	126	20
h.	Education	671	177	21
i.	Public Library	767	126	22
j.	Traffic management (traffic lights, curb cut design, etc.)	507	326	91
k.	Speed control	537	284	97
l.	Town Hall services	797	112	12
m.	Voting areas (Parking/accessibility)	519	288	75
n.	Land Use Planning	495	352	36
o.	Code Enforcement/Building Inspection	505	262	59

*Comments: _____

16. Please rank the following list of public improvements by placing a check (√) under the appropriate spending priority:

	High Priority	Medium Priority	Low Priority
• Route 1 North traffic management improvements	481	328	122
• Utility improvements for commercial & industrial development (i.e. sewer to Route 1 south Business Park District)	194	449	249
• Creation of new recreation areas such as ball fields, playgrounds, and parks	214	438	275
• Construction of more sidewalks and bicycle lanes along public streets	543	276	115
• Purchase of open space lands for preservation, recreation and other future town needs	454	303	172
• Provision for public coastal access for small boats	229	311	358
• Other 65			

Please circle the three (3) most important reasons why you have moved to (or) continue to live in Kennebunk.

a. Family	318
b. Proximity to job(s)	186
c. Small town atmosphere	751
d. Quality of town services	116
e. Character of housing & neighborhood	322
f. Access to beaches and coast	676
g. Quality of school system	230

h. Economic diversity of residents 46
i. Proximity of rural land/open space 248
j. Property tax rate 43
k. Other _____
(please explain)

18. Please list the three (3) most important challenges facing Kennebunk.
1. Traffic management
2. Growth Management
3. Retaining small town character
Keeping taxes down

Please check (√) the appropriate answer regarding your household:

19. Do you live in Kennebunk? 942 Yes 42 No

21. If yes, do you use your Kennebunk residence seasonally 101 (or) year-round 865 ?

22. How long have you lived in Kennebunk?

5 years or less 213, 6-10 years 166, 11-20 years 224, more than 20 years 365

23. Location of job of each wage earner?

Wage earner #1 K'Bunk 251
Wage earner #2 Within 15 Mile radius 203
Wage earner #3 Outside 15 Mile radius 202
Wage earner #4 Retired 316
(or) Retired _____

Please list ages of all household members:

Member #1_____
Member #2_____
Member #3_____
Member #4_____
Member #5_____
Member #6_____
Member #7_____
Member #8_____

25. In what area of Kennebunk do you live? (Please check (√) one)

243 western (area west of Maine turnpike)
324 central (between Turnpike and B&M Railroad r.o.w.).
401 eastern (area east of B&M Railroad to the ocean).

you have additional comments that you think would be helpful to the Planning Board, please feel free to attach them here or nd them to: Kennebunk Planning Board, Town Hall, 1 Summer Street, Kennebunk, ME 04043

APPENDIX B.

B. Public Forum Results

Town of Kennebunk Planning Board
Comprehensive Planning Workshop
Saturday, June 1, 2002

Meeting Notes:

Meeting Purpose: to educate the public about the status of the existing comprehensive plan and to collect input from a broad spectrum of people on how we, as a town, have done over the last 10 years and whether or how we should alter course for the future

Desired Outcomes:

- An understanding of the 1991 Comprehensive Plan goals, the accomplishments, the key issues and the consequences of different directions going forward
- Input on whether or not to stay the course or to make changes: If there should be changes, what should they be?
- Input on what people are looking for in open space for the town: Should the Open Space Committee set a goal for a certain percentage of town acreage to be open or for preserving certain qualities or types of space? Should there be public purchases of land? Should the Committee set a proactive plan to seek out desired land or only react to what becomes available?
- Input on the targeted growth areas in the 1991 plan: Should they stay as they are in the 1991 plan? Should they be expanded? If so, where?
- Input on whether or not to expand the commercial and industrial zones: If so, where? Should the town fund infrastructure costs?
- Input on town impact fees to be used to support the costs to the town of development: Should they be used? If so, on subdivisions and / or all lots? If so, for what purposes?

Agenda:

8:30	Welcome: Planning Board Chair
8:45	Meeting introduction: facilitator Presentation of the 1991 Comprehensive Plan goals and the accomplishments on those goals; some key current issues; the options and the consequences of different future actions
9:15	Small Group discussions
10:30	Brief report out on some of the ideas from the groups 15 minutes Break
10:45	Small Group Discussions
11:45	Meeting Wrap up and next steps in the Comprehensive Plan process, including ways to continue to share your opinion
12:00	Adjourn

Comments to the full group from the first small group discussion

How has the town done on meeting the goals? What areas need more work? What changes in direction would you suggest? Are there different goals that should be considered?

- Emphasize affordable housing more
- Marine resources access and river access
- Maintain (purchase) monastery land
- Change zoning to have more land for commercial and industrial
- Study Route 1 South similar to Route 1 North
- Bike path (not on a street) in a nice environment
- Need information on cumulative loss of wetlands since 1991
- Private road width increase beyond ten feet
- What kind of town does Kennebunk want to be?
- Maintain village/rural character
- Review comp plan again in 5 years
- Goals on target; implementation needs to change; issue of funding priorities
- Maintain even small spaces for a green, open space

Comments to the full group from the second small group discussion

Should the Open Space Committee set a goal for a certain percentage of town acreage to be open or for preserving certain qualities or types of space? Should there be public purchases of land? Should the Committee set a proactive plan to seek out desired land or only react to what becomes available? What is important to you about the future of open space in Kennebunk?

- Promote existing open spaces and provide parking
- Ask public to identify their favorite open spaces and then buy them as they become available with % from transfer tax, create a fund
- Prefer easements to town buying land
- No fee to use town land
- Put in plan to have the town set aside money to buy land as it becomes available; consistent with the plan
- Public access to open space in cluster development
- Some land <u>not</u> open to public use
- Use plan as a vision for open space, but not use town funds to buy land
- Coordinate any town purchases with other groups or government partnerships
- Fund maintenance of any public access

Comments to the full group from the third small group discussion

Should the targeted growth areas in the 1991 plan stay as they are? Should they be expanded? If so, where?

Should the new plan expand the commercial and industrial zones? If so, where?

Should the public fund infrastructure costs for development of commercial land?

- Can we increase density in sewered areas?
- Include affordable housing in any big development
- Increase required lot size in village
- Expand growth areas and at same time have disincentive to build in rural areas; larger lot sizes (two other groups agreed)
- Extension of sewer in West Kennebunk
- Expand Punky Swamp industrial area and Route 1 South - to increase tax base
- Restrict lot sizes in rural area; not expand in the Cat Mousam Road, Weatherhill area with our sewer
- Expand commercial along Route 1 and have developers share cost of expanding sewer via impact fees and make it attractive
- Do industrial/commercial expansion where it won't increase traffic in village
- Use area between Cat Mousam and Whitler Roads for industry and look to a limited turnpike spur
- What are we afraid of?
    - traffic congestion
    - loss of diversity
- How do we get back the young adult age group?
- Do not allow congregate or any residential in commercial zones

Comments to the full group from the fourth small group discussion

Should town impact fees to be used to support the costs to the town of development? If so, should they be assessed on subdivisions and/or all lots? For what purposes should such impact fees be used?

- 3-1 in favor
- Tipping in favor of impact fees, but concern about impact on affordable housing
- Yes, for the most part
- Bond issue for extending sewer
- Variable valuations
- Unanimously for impact fee more for subdivisions and less for individual
- Use for schools and traffic
- Yes to impact fees on all lots (maybe commercial and industrial as well)
- Do not use it for school, but all the other options
- Yes to reasonable impact fees; higher where trying to discourage growth
- Also on all improvements over $2,000

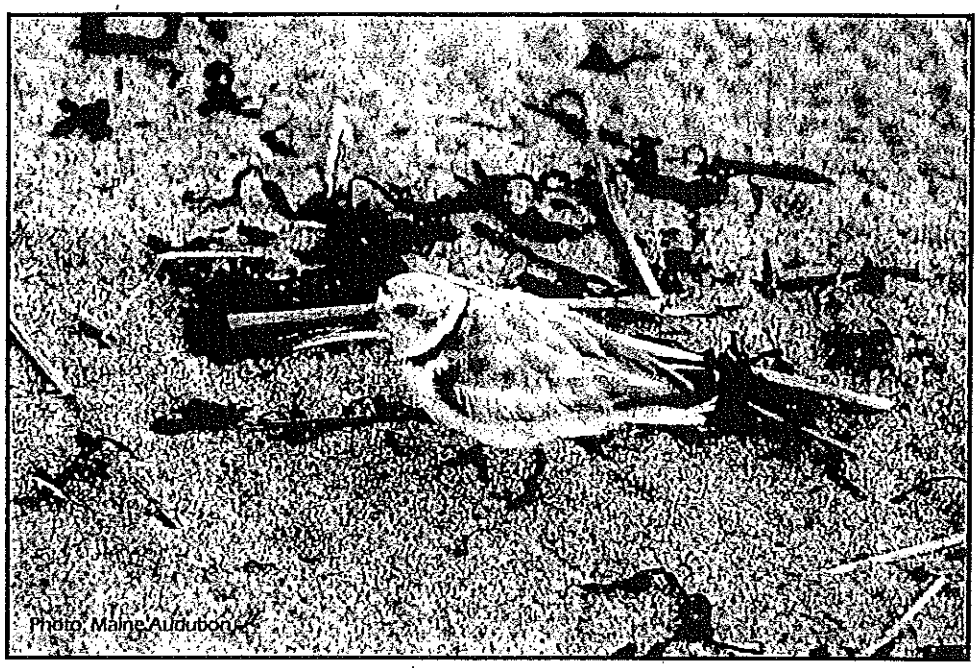
Beginning With Habitat

An Approach To Conserving Open Space

Appendix C

Town-specific Fact Sheets on High Value Plant and Animal Habitats and Rare Species

Piping Plover



Scientific Name: *Charadrius melodus*

Taxonomic Group: Birds

Range in Maine: Coastal areas in Southern Maine (York, Cumberland and Sagadahoc counties)

Habitat: Sand beaches and dunes

Seasonal Residency: Nesting season and spring and fall migrants

State Listing Status: Endangered

Federal Listing Status: Threatened

Basis for Listing: The Piping Plover is Endangered in Maine because of a small breeding population that is being maintained only by intensive management.

The species is also Federally listed as Threatened under the U.S. Endangered Species Act, but because their numbers are even more precarious in Maine, they were given state Endangered status in 1986.

In 1990, a recovery plan was completed for piping plovers in Maine establishing a goal to increase the plover population to at least 20 nesting pairs at 7 sites and produce at least 2.0 chicks per pair. Baseline plover numbers first reported in 1981 were 7 pairs nesting at 4 sites. Only because of intensive management activities for successful reproduction, have numbers steadily increased to 60 nesting pairs and 98 young in 1996.

Habitat degradation, human disturbance, and predation continue to threaten Piping Plover numbers and only with ongoing intensive management will their numbers be able to increase. Essential habitat was designated for piping plover nesting, feeding, and brood-rearing areas in 1995.

Continuing studies of the Piping Plover in Maine are summarized in the Wildlife Division's Research and Management Report.

Selected References:

Adamus, P.R. 1987. Atlas of Breeding Birds in Maine, 1978-1983. Maine Dept. Inland Fisheries and Wildlife. Augusta. 366 pp.

Knight, O.W. 1908. The Birds of Maine. C.H. Glass, Bangor. 693 pp.

Maine Department of Inland Fisheries and Wildlife: Endangered Species/Natural Heritage files and other unpubl. files.

Melvin, S. and M. McCollough. 1989. Piping Plover Assessment. Unpublished report, ME Dept. Inland Fish. and Wildl. 39 pp.

Palmer, R.S. 1949. Maine Birds. Bull. Mus. Comp. Zool. Vol. 102, Harvard College, Cambridge, Mass. 656 pp.

U.S. Dept. of Interior. 1988. Endangered and Threatened Wildlife and Plants. Federal Register: 50: CFR 17.11 and 17.12. U.S. Govt. Print. Off., Wash. D.C. 34 pp.

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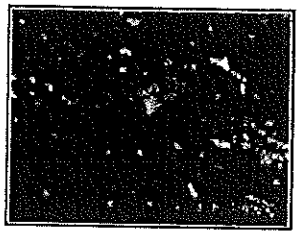
last updated 07/18/03

Least Tern



Scientific Name: *Sterna antillarum*

Taxonomic Group: Birds

Range in Maine: Restricted to spits of sand beaches south of the Kennebec River.

Habitat: Sand beaches with sparse vegetation and salt marshes for feeding and brood-rearing.

Seasonal Residency: Nests on southern Maine beaches from April to early June.

State Listing Status: Endangered

Federal Listing Status: None

Basis for Listing: The Least Tern is Endangered in Maine because of its small population size, population declines and limited distribution.

Historical nesting records for Least Terns in Maine are absent. They may have been present, but were extirpated by the State's first settlers. This once abundant seabird was nearly extirpated on the entire east coast in the late 1800's. The first recorded nesting colony of Least Terns in Maine was in Scarborough in 1961. Since then, east Terns have nested at 12 other sites in Maine.

Maine's Least Tern population has been monitored annually since 1977. During this period, the number of pairs has fluctuated between a low of 39 pairs at 3 sites in 1982 to a high of 125 pairs at 6 sites in 1993 (MDIFW 1993). Productivity averaged 0.54 chicks per pair between 1977-93. Recovery goals have not been established.

Continuing studies of the Least Tern in Maine are summarized in the Wildlife Division's Research and Management Report.

Selected References:

Adamus, P.R. 1987. Atlas of Breeding Birds in Maine, 1978-1983. Maine Dept. Inland Fisheries and Wildlife. Augusta. 366 pp.

Knight, O.W. 1908. The Birds of Maine. C.H. Glass, Bangor. 693 pp.

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McCollough, M. 1993. Least Tern Assessment. Unpublished draft report, ME Dept. Inland Fish. and Wildl., Bangor, ME. 37 pp.

Palmer, R.S. 1949. Maine Birds. Bull. Mus. Comp. Zool. Vol. 102, Harvard College, Cambridge, Mass. 656 pp.

ISSUE PROFILE

ESSENTIAL HABITAT: PIPING PLOVER AND LEAST TERN NESTING, FEEDING, AND BROOD-REARING AREAS

April 2003

BACKGROUND

Maine's fish and wildlife are a valuable public resource, yet some species are in danger of becoming extinct within the State. The Legislature recognized this by passing the Maine Endangered Species Act in 1975. In 1988, the Legislature amended the Act by adding habitat protection provisions in recognition of two issues: 1) the effect habitat loss has on endangered and threatened species in Maine; and 2) the confusion and sometimes costly problems that arise in the absence of consistent, predictable land use decision-making processes for endangered and threatened species. As a result, the Commissioner of the Maine Department of Inland Fisheries and Wildlife (MDIFW) may designate areas as "Essential Habitat" and develop protection guidelines for these Essential Habitats.

WHAT ARE ESSENTIAL HABITATS?

Essential Habitats are areas currently or historically providing physical or biological features essential to the conservation of an endangered or threatened species in Maine and which may require special management considerations. Examples of areas that could qualify for designation are nest sites or important feeding areas. For some species, protection of these kinds of habitats is vital to preventing further declines or achieving recovery goals. This habitat protection tool is used only when habitat loss has been identified as a major factor limiting species recovery. Before an area can be designated as Essential Habitat, it must be identified and mapped by MDIFW and adopted through public rulemaking procedures, following Maine's Administrative Procedures Act.

WHY DO THE PIPING PLOVER AND LEAST TERN NEED THIS LEVEL OF PROTECTION?

The piping plover is a small, sandy-colored shorebird that nests on beaches from Newfoundland to South Carolina. The least tern is the smallest North American tern and nests on beaches along the East and West Coasts. Both species are imperiled throughout much of their range in the United States and Canada. Once common on sand beaches in southern Maine, the piping plover and least tern are now listed as endangered under the Maine Endangered Species Act. The East Coast population of piping plovers is also federally listed as threatened. In 2001, only 55 pairs of piping plovers and 120 pairs of least terns nested in Maine.

Habitat loss and lack of undisturbed nest sites are two of the primary factors jeopardizing populations of piping plovers and least terns. Historically, Maine had more than 30 miles of suitable nesting beaches that may have supported up to 200 pairs of piping plovers and 1200 pairs of least terns. However, the construction of seawalls, tties, piers, homes, parking lots, and other structures along Maine's sand beaches has reduced the amount of suitable nesting habitat available to these species by more than 75%. Today, only about a dozen sites provide suitable habitat where these two species nest, feed, and raise their young. The capability of this remaining habitat to support nesting plovers and terns is further reduced by continued development and intense

recreational use. Ensuring the availability of this limited habitat is essential for the continued existence of piping plovers and least terns in Maine. Designation of these areas as Essential Habitat (on-going since 1995) will help to maintain the last remaining habitat for these endangered birds.

WHAT DOES ESSENTIAL HABITAT DESIGNATION MEAN TO A LANDOWNER?

Activities of private landowners are **not** affected by Essential Habitat designation **unless projects require a permit or license from, or are funded or carried out by, a state agency or municipality**. In these cases, the town or state agency reviewing the project must obtain an evaluation from MDIFW before issuing a final decision. **No additional permits or fees are required.** Designation of Essential Habitat simply establishes a standardized review process within existing state and municipal permitting processes. It ensures landowners of consistent reviews on land use permit applications where endangered and threatened species are involved, and eliminates the confusion, delays, and sometimes costly problems that can arise in the absence of standardized, predictable decision-making.

Landowners considering projects within Essential Habitats should initiate early consultations with the appropriate MDIFW Regional Wildlife Biologist, so that concerns for endangered or threatened species can be incorporated into preliminary project planning and design. When projects also fall within areas governed by Maine's coastal sand dune laws, all requirements of the Maine Department of Environmental Protection and sand dune laws must be met before MDIFW will consider the project. MDIFW also offers technical assistance to property owners who wish to manage their lands to enhance habitat for wildlife.

WHAT DOES ESSENTIAL HABITAT DESIGNATION MEAN TO STATE AGENCIES AND MUNICIPALITIES?

State agencies and municipalities shall not permit, license, fund, or carry out projects that will significantly alter an Essential Habitat or violate protection guidelines adopted for the habitat. An evaluation of the **final** project proposal must be obtained from MDIFW **prior** to issuing a decision. Before seeking formal MDIFW evaluation, concerns for endangered and threatened species should be addressed during preliminary planning and existing agency or municipal review procedures. Consulting early with MDIFW Regional Wildlife Biologists will facilitate identification of incompatible projects or appropriate modifications to proposals within an Essential Habitat. Failure to do so may result in unnecessary conflicts, delays, or project denials. The Department also offers guidance to municipalities when wildlife concerns are being addressed in comprehensive plans and town ordinances.

HOW DO YOU DETERMINE IF A PROJECT IS WITHIN AN ESSENTIAL HABITAT?

All Essential Habitats are mapped on sections of 1:24,000 U.S.G.S. topographic maps and indexed by town name. In addition, *"Boundary Line Detail Photos"* have been prepared for all developed beach areas on 1:9,200 color aerial photos. These photos depict the precise boundaries of piping plover and least tern Essential Habitats in relation to existing houses, roads, seawalls and other physical features. Maps and photos are available from all MDIFW and affected town offices, or they can be viewed and printed from MDIFW's website at www.mefishwildlife.com. Digital coverage can also be downloaded from the Maine Office of GIS at megis.maine.gov. Contact an MDIFW Regional Wildlife Biologist for assistance in verifying a project location relative to an Essential Habitat.

IF ONLY A PART OF YOUR PROPERTY IS WITHIN AN ESSENTIAL HABITAT, WILL EVERY PROJECT YOU CONSIDER BE AFFECTED BY ESSENTIAL HABITAT DESIGNATION?

No. Projects located wholly outside an Essential Habitat, regardless of whether some other portion of your property is within an Essential Habitat, are **not** affected by this rule.

WHAT TYPES OF PROJECTS REQUIRE MDIFW EVALUATION?

Any project that is wholly or partly within an Essential Habitat and is permitted, licensed, funded, or carried out by a state agency or municipal government, requires an evaluation by the Commissioner of MDIFW. Some examples of projects that require MDIFW evaluation are:

- subdivision of land
- construction or alteration of buildings, wastewater systems, or utilities
- exemption to minimum lot size requirements
- construction or relocation of roads
- dredging, bulldozing, or removing or displacing soil, sand, vegetation, or other materials
- alteration to wetlands, submerged bottomlands, or shoreland zones
- installation of docks, moorings, or aquaculture facilities
- beach nourishment or dune restoration
- state or municipal beach recreation management

Landowners, project planners, municipalities or state agencies considering a project proposal in or near an Essential Habitat should immediately contact an MDIFW Regional Wildlife Biologist for assistance. **Early consultations will help to resolve avoidable conflicts and prevent unnecessary delays, frustrations, and economic pitfalls that might otherwise arise during the final project review.**

ARE THERE PROJECTS EXEMPT FROM MDIFW REVIEW?

Yes. The following are examples of projects exempt from evaluation by MDIFW:

- emergency activities necessary for public health and safety
- emergency repairs to existing utilities and structures, including seawalls and roads
- any project **not** carried out by, funded by, or requiring a permit or license from a state agency or municipality

WHAT ARE THE REVIEW STANDARDS FOR PROJECTS WITHIN ESSENTIAL HABITATS?

A project must not significantly alter an Essential Habitat. If the MDIFW evaluation determines that significant alteration of the habitat would occur, **a state agency or municipal government shall not issue a permit or license for the project.** The following factors are considered by MDIFW when evaluating a project proposal at piping plover and least tern nesting, feeding, and brood-rearing areas:

- seasonal timing and magnitude of project
- degradation of coastal wetlands or sand dune systems
- increase in human disturbance, predation, or competition from other species
- reduction in the future capability of the habitat to provide nesting, feeding, and brood-rearing opportunities

IS THE SEASONAL TIMING OF PROJECTS A MAJOR CONCERN?

Yes! Piping plovers and least terns are sensitive to disturbance during their nesting season. Generally, this is

between **May 1 and August 31** but may vary slightly from year to year. Seasonal timing of activities will often be a determining factor in project reviews and should always be addressed in a project's design before seeking final MDIFW evaluation. **Contact an MDIFW Regional Wildlife Biologist for assistance in determining seasonal timing concerns.**

WILL BEACHES WITHIN ESSENTIAL HABITATS CONTINUE TO BE OPEN FOR SWIMMING AND SUNBATHING?

Yes! Some of our most popular State Parks (i.e. Reid and Popham Beach) are also successful tern and plover nesting areas. They provide examples of how, if managed properly, plovers, terns and existing recreational uses of beaches can coexist.

COULD ESSENTIAL HABITAT DESIGNATION BE USED TO PREVENT REBUILDING OF STORM OR FIRE-DAMAGED STRUCTURES OR SEAWALLS?

No. This rule is **not** intended to preclude rebuilding of existing structures in accordance with implementation of the coastal sand dune regulations. Furthermore, emergency repairs to utilities and structures, including seawalls, are exempt from this rule.

ONCE AN AREA IS DESIGNATED AS ESSENTIAL HABITAT, WILL IT ALWAYS BE SO?

Not Necessarily. The Law allows Essential Habitat designation only for species on Maine's Endangered and Threatened Species List. Designating piping plover and least tern nesting, feeding, and brood-rearing areas as Essential Habitat will allow Maine's piping plover and least tern populations to grow. If these species recover to the point where they are no longer endangered or threatened, all Essential Habitat designations will be eliminated. Also, if an individual area were no longer considered essential to achieving recovery goals for the species, Essential Habitat designation would be removed.

WHO CAN YOU CONTACT FOR MORE INFORMATION?

The Maine Department of Inland Fisheries and Wildlife. Please contact an MDIFW Regional Wildlife Biologist at the nearest regional headquarters:

Gray: 358 Shaker Rd., Gray, ME 04039
phone: (207) 657-2345

Sidney: 270 Lyons Rd., Sidney, ME 04330
phone: (207) 547-5318

Blanding's Turtle

Emydoidea blandingii

ENDANGERED

DESCRIPTION:

The Blanding's turtle is 7-9 inches long and distinguished by a black or dark-olive, helmet-shaped carapace (upper shell) usually patterned with tan or yellow spots or streaks. The head is large with a notched upper jaw and a long, bright yellow neck, throat and chin. The plastron (bottom shell) varies from yellow with dark blotches to almost completely black. The plastron has a moveable hinge that is used to partially close their shell. Males have a darkly pigmented upper jaw and concave plastron, whereas females have a yellow upper jaw and a flat plastron.

RANGE AND HABITAT:

Blanding's turtles occur in the northern tier states from Minnesota to Maine, but the range is not contiguous and there are several disjunct populations. The Maine population is linked to those in eastern New Hampshire and Massachusetts. Small, isolated populations also occur in Nova Scotia and New York. The species occurs only in southern York and Cumberland County. In Maine, Blanding's turtles are found most frequently in complexes of small, acidic wetlands and vernal pools in large blocks of forested habitat. They are occasionally found in large marshes, forested and shrub swamps and slow-moving rivers and streams. Although these turtles spend most of their time in the water, they readily travel overland from one wetland to another during the spring and summer. Upland habitats are critical for nesting, basking, estivating (a period of late summer inactivity), and as travel corridors for migrating among isolated wetlands.

LIFE HISTORY AND ECOLOGY:

Considerable knowledge of Blanding's turtle life history and movements comes from radio-telemetry studies conducted throughout their range including one in southern Maine in the 1990's. Turtles emerge from hibernation in April and disperse to vernal pools and other wetlands used by breeding frogs and salamanders. The high availability of amphibian eggs and larvae are crucial to the survival of turtles because they likely consume much of their annual food needs in May and June. Blanding's turtles readily travel overland (up to 1 ¼ miles) between wetlands and use up to 6 different wetlands per season. Most wetlands used are less than a ¼ acre in size. Female turtles reach sexual maturity at 14-20 years of age. Mating occurs from May to July. Nesting usually occurs in mid-June when females move up to 1 mile from wetlands to search for exposed sunny locations and sandy soils. Prior to human alteration of the landscape, turtles selected forest openings or exposed bedrock areas to nest. Now, most nest in yards, pastures and along road edges. During nesting excursions, females may remain out of wetlands for 3-17 days. Nest digging is initiated in the evening and completed after dark, and clutches include 5-11 eggs. Nest predation varies, but can be as high as 100% for some populations in some years. Incubation time is dependent on soil temperature, but typically lasts 68-118 days and hatching occurs from late August to October. Hatchlings likely overwinter in nearby wetlands. Turtles bask on sphagnum mats, logs, brush piles, hummocks, rocks, and wetland shores up to 120 feet from the wetland. As vernal pools dry and food supplies diminish, turtles may estivate for periods of 3-22 days in July to September. Estivation sites are typically under leaf litter in forested areas up to 300 feet from the nearest wetland. With the coming of fall rains, turtles move to hibernation wetlands, typically vernal pools and shrub swamps. Turtle may hibernate under 1 – 3 ft. of water on the bottom of pools either partially or completely covered with mud or leaves. Feeding begins in early spring after water temperatures rise to 60 degrees. Food items include molluscs, crayfish, larval amphibians, frogs, fish, insects, worms, tadpoles, and plant material. Blanding's turtles may live to be more than 77 years of age.

THREATS:

Blanding's turtles are extremely vulnerable to any source of adult mortality. It may take decades for a female turtle to replace herself with a single offspring surviving to adulthood. Because of this unusual life history, Blanding's turtle populations are found at low densities (less than 5 turtles/mi2 in Maine's best habitats). Losses on roads can be deleterious as can collecting for pets. The attrition of just a few individuals every year can lead to the long-term decline and extinction of a population. Habitat fragmentation and sprawl also threaten Blanding's turtles. Roads not only cause direct mortality but also

serve as barriers to movement between wetlands. Fragmentation isolates populations and greatly increases their risk of extinction. Roadside turtle nests are easily found by predators and graded by highway crews. In addition to being illegal, collecting for pets negatively affects local populations because it leads to the permanent removal of breeding adults. Secondary effects of human development – increased predator populations, pollution, filling of small wetlands and blocking upland travel corridors – also limit populations.

CONSERVATION AND MANAGEMENT:
The Blanding's turtle was a former candidate for federal listing and was state-listed as threatened in 1986. Extensive surveys conducted in the 1990's demonstrated that fewer than 1000 individuals likely occur in Maine in a highly fragmented landscape. The species status was upgraded to endangered in 1997. Blanding's turtles are strictly protected from take (collecting, possession or killing) by the Maine Endangered Species Act (MESA). Effective conservation of this species entails identification and conservation of the largest populations and the large blocks of habitat that they inhabit. Rare turtle populations documented in York, South Berwick, Biddeford, Wells, Alfred, and Lyman have the greatest conservation potential, while smaller, peripheral populations isolated by physical barriers (e.g. Interstate 95) may be in greater jeopardy of local extinction. Towns having Blanding's turtles should consult with MDIFW to identify opportunities to conserve large blocks of land (particularly those >500 acres that have small wetland complexes) in rural, open space status where further fragmentation, development, and road-building should be discouraged. Maine's Natural Resource Protection Act (NRPA) protects wetlands, but not adjacent upland habitats. If current wetland regulations, voluntary protection measures, or municipal zoning fail, Blanding's turtle habitat is eligible to be protected by Significant Wildlife Habitat provisions of the NRPA and Essential Habitat provisions of the MESA.

Recommendations:

- No activities should be permitted that could lead to the loss or degradation of turtle wetlands including filling, dredging, sedimentation, or changing hydrology unless the activity is approved by MDIFW;
- A minimum 250-foot forested buffer zone should be maintained around target wetlands hosting mapped Blanding's turtle locations.
- All wetlands, regardless of size, within ¼ mile of mapped Blanding's turtle locations should be protected from loss or degradation and buffered by forested upland;
- Sources of mortality from roads, use of machinery for landscaping, plowing, forestry should be eliminated (or greatly diminished by conducting these activities during the winter season).
- Avoid new roads and road improvement projects (e.g. paving, widening) that can lead to increased traffic volume and speed within ¼ mile of known turtle wetlands;
- Impervious surfaces such as yards, buildings and roads should be minimized in uplands adjacent to turtle wetland habitat. Intensive developments, including subdivisions and service centers, that concentrate human populations and road traffic within ¼ mile of turtle wetlands should be avoided
- Towns should strive to maintain important habitat areas identified by MDIFW in a low density, rural setting by identifying these areas in comprehensive plans and zoning accordingly.

Black Racer

Coluber constrictor

ENDANGERED

DESCRIPTION:

The black racer or eastern racer is the largest snake in Maine and attain lengths of 6 feet. Adults are uniformly black to bluish-black with shiny, smooth scales; and have a white chin, neck and throat. The underside is pale to medium gray. A thin white line extends from the snout over the eye to the neck, only observable at close range. Juveniles are gray or bluish gray with a patterned row of dark gray, brown, or reddish brown blotches along the top of the back; they have dark spots on flanks and underside; and have an unpatterned tail. As they get older, the patterned blotches fade, the dorsal surface darkens and all patterning disappears when the snakes reach 30 inches in length.

RANGE AND HABITAT:

Racers occur across most of the United States except the Southwest. The northern black racer, *C. c. constrictor*, is the subspecies in Maine. Maine is the northern extent of their range in the East. Although they were common as far north as Cobboseecontee Lake in the 1930's, they are now rare and their range is limited to York, Cumberland and southern Oxford counties.

The black racer occurs in a variety of moist and dry habitats, including deciduous and coniferous forests; fields; woodlands interspersed with fields; and swamps or marshes. In southern Maine, open grasslands, power line rights of ways, orchards, old buildings, rocky ridges and the edges between forests and fields seem to be preferred habitats.

LIFE HISTORY AND ECOLOGY:

Male racers reach sexual maturity in August and September when they are just over a year old, but do not mate until the following spring. Ovulation begins in late-May. Mating occurs in May to early June. Pheromones released by a female may attract several males. In the East, egg laying occurs from early June to early-August. Clutch size ranges from 2-31, although 9-16 is most common. Favored nesting sites include mammal burrows, rotting logs and stumps, and sawdust piles. Individuals typically nest singly, although communal nesting occurs occasionally. Incubation lasts 43-65 days depending on temperature. Hatching occurs from late-July to September. Despite their scientific name, racers do not kill by constriction, but bite and hold their prey. Typical prey includes frogs, toads, small birds and their eggs, small mammals, insects and other snakes. In the Northeast small mammals and snakes are the primary prey. Black racers are territorial and have an average home range size of 30 acres. They are active from March to October, although they may become active during warm winter days. Winter hibernation sites include mammal burrows, caves, rock crevices, gravel banks, and rotting logs and stumps. Racers show high fidelity to winter hibernacula and may hibernate communally with other snake species. Racers may live to be over 10 years of age. They are a fast snake, and if pursued they often escape by climbing into low branches and bushes.

THREATS:

Racers are still locally common throughout New England, but may be declining is some areas. Factors that have placed this species at high risk of extirpation in Maine include a drastic reduction in its range, inherent rarity at the northern edge of its range, and habitat loss. Historic accounts suggest the racer was formerly more abundant and widespread in Maine. At the height of Maine agriculture, it ranged farther north to the Belgrade Lakes area. Its numbers and range have declined drastically as agricultural land has reverted to forestlands or have been developed. Habitat fragmentation results in increasingly small patches of habitat that can no longer support the habitat needed to support a viable population of these snakes. Increased roads density may result in increased mortality. Racers have been killed by people and pets when they appear in yards. As a state-listed species, they are strictly protected from killing or collection as pets. At the northern edge of their range, cold temperatures may contribute to hatchability of eggs and overwinter survival of adults.

CONSERVATION AND MANAGEMENT:
The black racer was listed as endangered in Maine in 1986 because of its reduced range and population. Few racers are sporadically reported from southern Maine each year. Reoccurring records of racers are limited to only 3 locations in York County: agricultural land in Alfred and two sandplain grasslands – Wells Barrens and the Kennebunk Plains. Racers seem to do well in the blueberry and grassland habitats if such areas are maintained and not fragmented. Effective conservation of racers will require finding other populations in large blocks (>500 acres) of rural, agricultural lands. Habitat protection is likely the most important means of conserving the species in the state. Other recovery techniques may include construction of hibernation and nesting habitat near suitable habitat. Reintroduction techniques have not been developed, and snakes from source populations to the south may not be well-adapted for life in the north. Very little is known about the life history of racers in Maine and studies of habitat use, movements and ecology are needed. It is illegal to kill a black racer because of protection provided by their endangered status.

Towns with black racer occurrences should protect large blocks of open space in forested, shrub or agricultural rural environments.

Conservation recommendations:

- Towns should strive to maintain important habitat areas identified by MDIFW as rural settings by identifying habitats in comprehensive plans and zoning accordingly.
- Avoid constructing new roads in blocks of suitable habitat that result in increased mortality and habitat fragmentation.
- Eliminate human persecution of racers. Education about black racers and their protected status may reduce mortality and promote gathering information on new populations.

Spotted Turtle

Clemmys guttata

THREATENED

DESCRIPTION:

The spotted turtle is the only turtle in Maine with distinct yellow spots on a smooth, low, black carapace (upper shell). The skin on the head, limbs and tail is gray to black and is also patterned with yellow spots. The undersurface of limbs may be orange, pink, or salmon-red. The plastron (lower shell) is yellow or yellow-orange and patterned with black blotches on each scute. These small turtles are only 4-5 1/2 inches long. Males have a concave plastron, tan chin, brown eyes, and longer, thicker tails, whereas females have a convex or flat plastron, yellow chin, orange eyes, and shorter tails.

RANGE AND HABITAT:

This species occurs in the northern tier states from Michigan to Maine and down the eastern seaboard to Florida. Maine is at the northern edge of the range. Populations in York and Cumberland Counties are contiguous with those in New Hampshire, but disjunct populations occur along the coast and interior central Maine as far north as Farmington and the Bangor area. In Maine, spotted turtles are most frequently associated with complexes of small, acidic wetlands and vernal pools located in large, intact forested landscapes. They also use small streams, shrub swamps, wet meadows, bogs, and forested swamps. Although these turtles spend most of their time in the water, they readily travel overland between wetlands during the spring and summer. Upland habitats are critical for basking, estivating (a period of late summer inactivity), and as travel corridors for movements between isolated wetlands.

LIFE HISTORY AND ECOLOGY:

Spotted turtle life history and movements are documented from radio-telemetry studies conducted throughout the species range, including a study in southern Maine in the 1990's. Turtles emerge from hibernation in April and disperse to vernal pools and other wetlands used by breeding frogs and salamanders. Amphibian eggs and larvae are crucial to the survival of turtles because they likely consume much of their annual food needs in May and June. Most wetlands used are less than a ¼ acre in size. Spotted turtles in Maine traveled an average of 3/4 mile annually and used up to 3 different wetlands. They attain sexual maturity at 7-10 years of age. Mating occurs from March to May. During June, females leave the wetlands and travel up to 1/3 mile to a sunny site with sandy soils to lay a clutch of 3–7 eggs. Spotted turtles occasionally nest in natural forest openings, exposed bedrock areas, or sedge hummocks in swamps, but are frequently attracted to yards, pastures, gravel pits and road edges. Nests are often concentrated in human created habitats where nest loss may be high from predators or road grading. Incubation time depends on soil temperature, but typically lasts 88-125 days, and hatching occurs in September and October. Eggs may not hatch in cold, wet summers. Hatchlings probably overwinter in nearby wetlands, but little is known of their habitat use and movements until they become adults. Turtles bask on sphagnum mats, logs, brushpiles, hummocks, rocks, and wetland shores. As vernal pools dry and food supplies diminish, turtles may estivate (a period of dormancy) for 15 to 90 days in upland habitats in late summer. During estivation, turtles burrow into the forest leaf litter up to 260 feet from the nearest wetland. With the coming of fall rains, spotted turtles move to wetlands for hibernation, typically vernal pools, under root hummocks in red maple swamps, or along the undercut banks of small streams. They sometimes hibernate communally. Feeding begins in early spring as the ice thaws. Food items include amphibian eggs and larvae, worms, molluscs, and aquatic insects.

THREATS:

Turtles have evolved a life history strategy of long life (greater than 30 years for spotted turtles) to offset a long age to first reproduction and high nest mortality. Because of this unusual life history, spotted turtle populations occur at low densities (only about 21 turtles/mi.2 in Maine), and are extremely vulnerable to any source of adult mortality. Road mortality and collecting for pets can be deleterious, and the attrition of just a few individuals every year can lead to the long-term decline and extinction of a population. Habitat fragmentation and sprawl also threaten spotted turtles. Roads cause mortality, separate wetlands from nesting sites, and act as barriers to movement. Fragmentation isolates populations and greatly increases their risk of extinction. Roadside turtle nests are easily found by predators and graded by highway crews.

In addition to being illegal, collecting for pets affects populations by removing valuable breeding adults. Secondary effects of human development – increased predator populations, pollution, filling of small wetlands and blocking upland travel corridors – also limit populations.

CONSERVATION AND MANAGEMENT:
The spotted turtle was state-listed as threatened in 1986. Surveys of over 2500 wetlands conducted in Maine in the 1990's documented spotted turtles at about 100 new sites. It is believed that only a few thousand spotted turtles occur in the state in a highly fragmented landscape. Spotted turtles are strictly protected from take (collecting, killing or in possession) by the MESA. Effective conservation of this species entails identification and conservation of the largest populations and protection of large blocks of open space. Spotted and Blanding's turtles overlap greatly in range and have similar conservation needs. Rare turtle populations documented in York, South Berwick, Biddeford, Wells, Alfred, and Lyman have the greatest conservation potential, while smaller, peripheral populations isolated by physical barriers, like Interstate 95 and urban areas, may be in greater jeopardy of local extinction. Towns having spotted and Blanding's turtles should consult with MDIFW to develop strategies for conserving large blocks of land (particularly those >500 acres that have small wetland complexes) in rural, open space where further fragmentation, development, and road building should be discouraged. Maine's Natural Resource Protection Act (NRPA) protects wetlands, but not adjacent upland habitats. If current wetland regulations, voluntary protection, or municipal zoning fail as habitat protection strategies, spotted turtle habitat is eligible to be protected by Significant Wildlife Habitat provisions of NRPA (vernal pools and endangered species) and Essential Habitat provisions of the Maine Endangered Species Act.

Conservation recommendations:

- No activities should be permitted that could lead to the loss or degradation of turtle wetlands including filling, dredging, sedimentation, or changing hydrology unless the activity is approved by MDIFW;
- A minimum 250-foot forested buffer zone should be maintained around mapped spotted turtle locations.
- All wetlands, regardless of size, within ¼ mile of mapped spotted turtle locations should be considered potential habitat, protected from direct impacts, and buffered by forested upland;
- Avoid new roads and improvement projects (e.g. paving, widening) that may lead to increased traffic volume and speed within ¼ mile of known turtle wetlands;
- Impervious surfaces such as yards, buildings and roads should be minimized in uplands adjacent to turtle locations. Intensive developments (e.g. subdivisions, service centers) that concentrate human populations and traffic within ¼ mile of turtle wetlands should be avoided.
- Towns should strive to maintain important habitat areas identified by MDIFW in a low density, rural setting by identifying important habitat areas in comprehensive plans and zoning accordingly.

Eastern Box Turtle

Terrapene carolina

ENDANGERED

DESCRIPTION:

The eastern box turtle is distinguished by a brownish carapace (upper shell) with yellow or orange radiating lines, spots, or blotches on each scute; and black to reddish-brown skin with yellow, red, or orange spots and streaks; and a tan to dark brown plastron (lower shell). The box turtle's most distinctive feature is a hinged plastron, allowing the animal to withdraw its legs and head entirely within its closed shell. Males have a red iris; concave plastron; thick tails; and long, curved claws on the hind feet. Females have a yellowish brown iris; flat or slightly convex plastron; a carapace that is more domed than the male; short, slender, straighter claws on the hind feet; and a shorter, and thinner tail than in males.

RANGE AND HABITAT:

The box turtle occurs throughout the eastern U.S. but reaches the northern extent of its range in southern Maine. This is undoubtedly the state's rarest reptile, and they have probably never been common here. It is locally common, but declining elsewhere throughout its range. No populations have been documented recently in the Maine, but, if present, they would most likely occur in the southwestern part of the state. Box turtles have been found in recent years as far north as New Vinyard, Franklin Co. and Hermon, Penobscot Co., although these could have been released pets.

Box turtles are the most terrestrial turtle in the state, rarely using wetlands. Box turtles are Maine's most terrestrial turtle and prefer moist woodlands and wet, brushy fields especially where sandy soils are prevalent. They occasionally are found in meadows, bogs and marshes.

LIFE HISTORY AND ECOLOGY:

Box turtles emerge from hibernation in late-April or early-May following the first warm spring rains. Box turtles reach sexual maturity at 5-10 years of age. They mate anytime during the spring and summer and females may remain fertile for 2 – 4 years after mating. Nesting in Maine likely occurs in June like most other turtles. Nest sites are typically patches of sandy or loamy soil with adequate solar exposure. Most nests are started in the evening and completed after dark. The female uses her back legs to dig the egg chamber and lays a clutch of 4-5 eggs. Incubation time is dependent on soil temperature, but typically lasts 70-90 days with hatchlings emerging from September into October. They are omnivorous and feed on land or in water. Food items include fungi, snails, crayfish, insects, fish, frogs, salamanders, flowers and fruits. Box turtles seek favorable sunny areas to warm themselves and seek shelter under rotting logs, decaying leaves or enter shallow pools to escape the heat of the day. They enter hibernation at about the time of the first killing frosts. When entering hibernation, turtles dig burrows into loose soil, sand, vegetative debris, mud of ponds or streams, or they may use mammal burrows. As the soil temperature drops, they dig deeper. Hibernation sites are located within their home range and may be used in successive years. They usually have a home range of just 2 – 4 acres or an area of activity just 300 to 700 yds. in diameter. They may live more than 100 years.

THREATS:

Box turtle populations are believed to be declining in New England. Habitat loss and fragmentation undoubtedly stresses populations by increasing adult mortality and nest predation. Predators (skunks, foxes, and other mammals), present at high densities in urban areas, dig nests and consume young. Humans have had a profound impact on box turtles. Slow moving turtles are vulnerable to road mortality. They are popular in the pet trade and commercial collection is a serious problem. Tens of thousands are collected in the U. S. to be sold in foreign countries. Thousands die during shipping or shortly after being taken into captivity. As a Maine endangered species, box turtles are strictly prohibited from collecting from the wild. It is also illegal to possess a box turtle as a pet, even if purchased outside of the state. Released pet turtles in Maine may introduce diseases into native populations and critically alter the genetic make-up of populations uniquely adapted to a northern existence. Box turtles in Maine may be stressed at the northern edge of their range. Because of cool summers, nests may not hatch every summer. Deep

frosts in winter may kill hibernating turtles, however, although it has been shown that box turtles at the northern edge of their range can withstand some freezing.

CONSERVATION AND MANAGEMENT:
The Eastern box turtle was listed as endangered in Maine in 1986 because of its critically small population, stresses from being at the northern edge of its range, and threats to the population from habitat fragmentation and increased urbanization.

No populations of box turtles have been recently discovered in the state, despite considerable effort to locate populations of rare and endangered species in southern Maine. The few box turtles found in the last 20 years may be predominantly released pets. Focused surveys need to be completed in some areas in southern Maine where large blocks of suitable habitat and populations may still persist. Recovery actions may entail reintroduction. However, this techniques is not well developed, and turtles from source populations to the south may not be well-adapted for life in the north.

Towns with box turtle occurrences should protect remaining areas of open space in a forested, rural environment.

Conservation recommendations:

- Towns should strive to maintain important habitat areas identified by MDIFW as rural settings by identifying important habitat areas in comprehensive plans and zoning accordingly.
- Avoid constructing new roads in blocks of suitable habitat because they result in increased mortality and habitat fragmentation.
- Potential sources of mortality should be minimized wherever box turtles are detected. Use of heavy machinery for construction, landscaping, plowing, or forestry should be conducted during the winter when turtles are hibernating.

Grasshopper Sparrow

Ammodramus savannarum

ENDANGERED

DESCRIPTION:

The grasshopper sparrow is a small, inconspicuous bird known for its buzzy, grasshopper-like song. This sparrow is 5 inches in length with a wingspan of about 8 inches and has a short, pointed tail . The flat head has a pale buffy-white central stripe. A yellow patch at the bend of the wing can been seen at close range. The unstreaked, cream-buff breast distinguishes it from other grassland sparrows. Its song is a high, hissing, insectlike buzz preceded by weak *tik* notes.

RANGE AND HABITAT:

The grasshopper sparrow breeds in grasslands across the U. S. except in the Southwest. Maine is the northernmost extent of the breeding range in the East. Grasshopper sparrows only nest at 4 sites in southern and central Maine. Wintering areas are the southern U. S. and Central America.

Grasshopper sparrows require grasslands of at least 30 acres and prefer fields >100 acres. All breeding sites in Maine are >200 acres. Preferred grassland have short, native bunch grasses, minimal litter cover, patches of bare ground, scattered forbs and short shrubs and fence posts provide for perches. Bare ground is important for allowing adults and young to run to escape predators and search for insects. These vegetation characteristics are most frequently found in glacial outwash plains dominated by sand soils. Breeding sites in southern Maine include airports and intensively managed blueberry barrens. The Kennebunk Plains, one of Maine's largest grasslands (600 acres), supports 30 – 60% of the state's grasshopper sparrows, the largest population in the Northeast.

LIFE HISTORY AND ECOLOGY:

Grasshopper sparrows first breed at one year of age. Males arrive at breeding areas in late May, 5 – 10 days before the females arrive. Males establish territories and display to prospective mates from perches on weed stalks, shrubs or fence posts. Nest building begins immediately following pair formation. A cup nest is built on the ground usually at the base of a clump of grass or a shrub. The nest is domed with overhanging grasses and has a side entrance. Females lay between 3 – 6 eggs, although typically 4 to 5. The female incubates the eggs for 11 – 13 days, after which she broods the chicks. Both parents share feeding duties. The young leave the next after 9 days and remain concealed below the vegetation. Fledglings disperse from the natal territory, but are still fed by the female for an additional 4 – 19 days. Adults may produce 2 broods during the breeding season, which lasts from May through the second week of August. The grasshopper sparrow forages exclusively on the ground. During the breeding period, insects, mostly grasshoppers, make up most of the diet. Seeds of various grasses and weeds make up the rest. Fall migration begins in mid- or late-August and continues through September.

THREATS:

Grasshopper sparrows were once common in New England, however, because of habitat loss and fragmentation now breed only at a few scattered locations in the Northeast, mostly at airports, military bases, large blueberry barrens and coastal headlands. In the past 100 years, there has been a decline in the quantity and quality of grasslands for wildlife. Maine agricultural lands have diminished from 33% of the landscape to 6% as farmland has reverted to forests or been converted to residential and commercial development. In the Northeast, hayfields were traditionally harvested in late summer and provided ideal habitat for birds throughout the breeding season. Today most hayfields are mowed earlier and more frequently or planted to crops. Pastures can be suitable habitat for grassland birds unless they are subject to heavy grazing. Extensive row crops or fields uniformly covered with mat-forming grasses are not suitable. Some agricultural pesticides may negatively affect grassland birds or their insect food.

CONSERVATION AND MANAGEMENT:

The grasshopper sparrow was listed as endangered in Maine in 1986 because of small populations, declining habitat and limited distribution in the state. At the peak of agricultural development, they were

common in many large agricultural fields and pastures of southern and central Maine. After 1950, declining agriculture and increasing reforestation resulted in widespread loss of suitable breeding habitat. Since 1983, 50 - 80 territorial males occurred at just 4 breeding sites in York and Cumberland Counties. Intensive site management, including prescribed burning, mowing, and curtailment of herbicide spraying has been necessary to retain populations at the Brunswick Naval Air Station, the Kennebunk Plains, and the Wells Barrens. The continued existence of this species depends on maintaining large grassland communities. Additional research is needed to document populations, productivity and limiting factors in different habitats and to assess management techniques. Reclamation of large sand or gravel pits may create suitable habitats with proper vegetation management. Nests, eggs and fledglings of grasshopper sparrows are strictly protected by the MESA.

The grasshopper sparrow shares its habitat with many other rare and declining species such as the upland sandpiper (threatened), vesper sparrow, horned lark, killdeer, bobolink, meadowlark, northern harrier, and savannah sparrow. All these species are reliant on grasslands but are declining in the Northeast. Conservation of the grasshopper sparrow depends on protecting and maintaining the remaining grassland areas of the state, particularly fields > 100 acres. Habitat protection, enhancement and management are key to the species' recovery. Information on the location of grasshopper sparrow nesting areas, grassland bird surveys and management are available from MDIFW.

Recommendations:

- Known grasshopper sparrow nesting areas should be placed in long-term habitat protection, maintained as grasslands, and not converted to other land uses.
- Approximately 40% of the vegetation cover (preferably native bunch grasses) should be kept at a height of 4 – 12 in. with minimal litter and grass cover. Maintain patches of bare ground, scattered tall forbs (8-25 in.) and short shrubs for song perches. Keep grazing animals off fields during the critical nesting period (May 1 to August 5).
- Avoid mowing areas with nesting grasshopper sparrows between May 1 and August 5, especially since they may have a second brood in late summer. If mowing is essential prior to this date, mark nest sites or locations of young birds and leave patches of unmowed grass.
- Maintain some areas of fields with patches of bare ground or sparse cover.
- Use conservative mowing techniques. Raise mowing bar to >6 in. to prevent destroying nests and young.
- Manage multiple contiguous fields for conservation. Provide a mosaic of grassland types by rotational mowing or burning.
- Burn fields every 5 – 7 years after September 1 or before May 1, and do not burn >50% of a grassland within a year.

Upland Sandpiper

Bartramia longicauda

THREATENED

DESCRIPTION:

Upland sandpipers are among the rarest and most appealing of grassland birds in the Northeast. They are a large shorebird (12 inches high, 26 in. wingspan) identified by a small head, long neck, long tail, black rump, overall buffy plumage with intricate brown markings, and yellow legs. Feathers on the back are olive-buff and strongly barred dark brown with pale buff fringes. The dark streaking on the buff colored breast contrasts with prominent dark chevrons along the white flanks. The wings are long and pointed. In flight the underside of the wings are white and strongly barred dark brown. The top of the wing is blackish at the tip and brown next to the body. It has a prominent dark eye and crown stripe. The short bill is curved slightly downward. When alighting the species momentarily holds its wings straight up. Its call is a liquid, mellow *ch-wut,* and in flight it whistles a strong *qui-di-di-du.*

RANGE AND HABITAT:

The upland sandpiper breeds across North America from Alaska, the prairie provinces, midwestern states and northern tier states to Maine. The highest nesting densities are in the northern prairie states. In Maine, upland sandpipers breed in large grasslands in most of the state except the western mountains and the northwest. Most of the state's population nests in the Downeast blueberry barrens. Wintering areas are in South America with largest concentrations in Argentina.

Upland sandpipers require large (>150 acre), open, short-grass areas such as blueberry barrens, meadows, pastures, hayfields, agricultural fields, airports and occasionally in bogs and open peatlands. They prefer a mix of short and tall (<24 inch) grass interspersed with patches of bare ground and some tall singing perches (fence posts, etc.). They avoid fields with uniform grass and legumes and a dense litter layer.

LIFE HISTORY AND ECOLOGY:

Upland Sandpipers first breed when one year of age. Adults arrive on the breeding grounds in Maine from mid-April to early May. Males call while they circle high above their breeding territories. After elaborate courtship displays, they establish pair bonds and select a nest site. They nest in extensive, open tracts of short grassland cover types. These birds are loosely territorial, and nesting territories are usually grouped in nesting fields. Nest sites are defended, while nearby loafing and feeding sites are shared communally. The nest is a shallow scrape in the ground, lined with dry grass with overhanging vegetation for concealment. A typical clutch of 4 eggs is laid and incubated for 24 days. Within 24 hours of hatching, chicks leave the nest. At least one parent guards the chicks until fledging occurs at 30-34 days of age. Feeding and brood rearing occur in open, short, grassy cover types. Prey items are primarily insects and include grasshoppers, crickets and other small invertebrates.

THREATS:

As grasslands have disappeared from landscape, so too have upland sandpipers. In the past 100 years, there has been a decline in the quantity and quality of grasslands for wildlife. Maine agricultural lands have diminished from 33% of the landscape to 6% as grasslands have reverted to forests or have been fragmented by residential and commercial development. In the Northeast, hayfields were traditionally harvested in late summer and provided ideal habitat for birds throughout the breeding season. Today most hayfields are mowed earlier and more frequently or planted to crops. Pastures can be suitable habitat unless they are subject to heavy grazing. Extensive row crops or fields uniformly covered with mat-forming grasses are not suitable. Some agricultural pesticides may negatively affect grassland birds or their insect food.

CONSERVATION AND MANAGEMENT:

The upland sandpiper was listed as threatened in Maine in 1997 because of small populations and regional concern for declining numbers and habitat in the Northeast. The species is also listed as a Migratory Bird Species of Management Concern in the Northeast by the USFWS. Historically, upland sandpipers were considered a common summer resident in Maine and were distributed among 13 counties in Maine. At the

peak of agricultural development, they were common in many large agricultural fields and pastures. After 1950, declining agriculture and increasing reforestation resulted in widespread loss of suitable breeding habitat. In 1997, about 148 pairs of upland sandpipers occupied 57 grassland/barren sites in 9 counties. Prime breeding habitat is limited to the few remaining large grasslands in the state. Intensively managed blueberry barrens function as important breeding habitat. Continued existence of this species depends on maintaining these types of plant communities. Maine has the largest upland sandpiper population in the Northeast, and as such, will play a unique role in conservation of the species in the region. Additional research is needed to document populations, productivity and limiting factors in different habitats and to assess management techniques. Habitat protection, enhancement and management are key to the species' recovery. Nests, eggs and fledglings of upland sandpipers are strictly prohibited from take by the MESA.

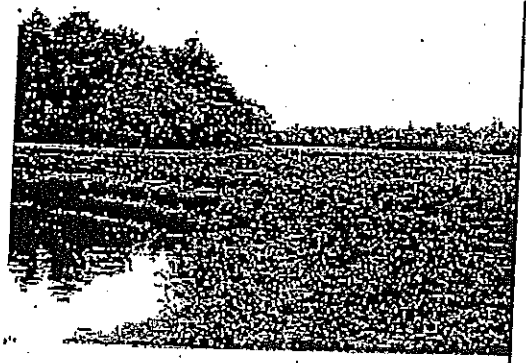
The upland sandpiper shares its habitat with many other rare and declining species such as the grasshopper sparrow (endangered), short-eared owl, vesper sparrow, horned larks, killdeer, bobolink, meadowlark, northern harrier, and savannah sparrow. All these species are reliant on grasslands and all are declining in the Northeast. Conservation of the upland sandpiper depends on protecting and maintaining the remaining grassland areas of the state, particularly fields > 150 acres. Information on the location of upland sandpiper nesting areas, grassland bird surveys and management are available from MDIFW.

Recommendations:

- Known upland sandpiper nesting areas should be maintained as grasslands and not converted to other land uses.
- Keep approximately 40% of the vegetation cover at a minimum height of 8 to 12 in. by rotational grazing. Keep grazing animals off fields during the critical nesting period (May 1 to July 15).
- Avoid mowing areas with nesting upland sandpipers before August 1. If mowing is essential prior to this date, mark nest sites or locations of young birds and leave patches of unmowed grass in these areas.
- Maintain some areas of fields with patches of bare ground or sparse cover.
- Use conservative mowing techniques. Raise mowing bar to >6 in. to prevent destroying some nests and young.
- Manage multiple contiguous fields for conservation. Provide a mosaic of grassland types by rotational mowing or burning.
- Burn fields every 5 – 10 years after September 1 or before May 1, and do not burn >50% of a grassland within a year.

Spartina Saltmarsh

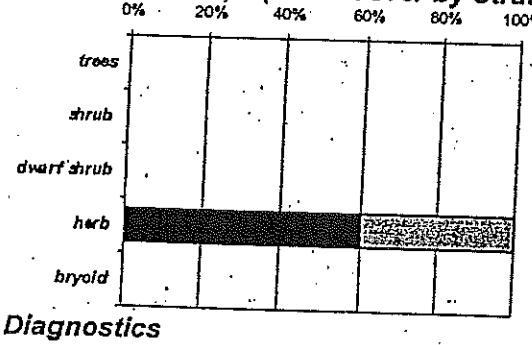
Large saltmarshes dominated by expanses of saltmeadow cordgrass, smooth cordgrass, and/or black-grass. Shrubs are virtually absent, and the herbaceous cover is usually >85%. Saltmeadow cordgrass gives a meadow-like appearance over much of the marsh; at slightly higher elevations within the marsh, black-grass may be dominant, and along creeks or at elevations just below mean high water, smooth cordgrass may be dominant. Salt pannes with abundant seashore saltgrass may dot the marsh; seaside plantain may also be locally abundant. Sea-lavender is often found at the upper tidal fringe. The dominant species typically form bands corresponding to tidal inundation zones.



(Based on 29 samples)

Typically, these are saltmarshes associated with beach-dune systems or the outer reaches of estuaries. Peat is typically several meters thick. Most are large (> 10 acres); but they occasionally occur as smaller pockets along estuaries and coves.

Vegetation Profile (Total Cover by Stratum)



Associated Rare Plants

- Dwarf glasswort
- Lilaeopsis
- Rich's sea-blite
- Saltmarsh false-foxglove
- Seabeach sedge
- Slender blue flag

Diagnostics

Coastal back-dune marshes, or near the outer reaches of estuaries, with saltmeadow cordgrass, smooth cordgrass, and/or black-grass totalling >35% cover, often in bands; most other species less abundant, many restricted to the upper tidal fringe.

Similar Types

Mixed Graminoid-Forb Saltmarshes may also have cordgrasses and/or black rush abundant, but will also have a mix of other co-dominant species, which tend to occur in patches rather than tidal zones; they are typically smaller, often under 5 acres, and tend to occur further upstream in estuaries or in smaller, more protected pockets. Brackish tidal marshes, which also occur further upstream in estuaries, lack saltmarsh cordgrasses.

Characteristic Species

Sapling/shrub

Dwarf Shrub

Herb

Common arrow-grass	(F,C)
Saltmeadow cordgrass	(F,C)
Sea milkwort	(F,C)
Smooth cordgrass	(F,C)
Alkali bulrush	(C)
Black-grass	(C)
Bristly aster	(C)
Seashore saltgrass	(C)
Seaside goldenrod	(C)
Seaside plantain	(C)

Bryoid

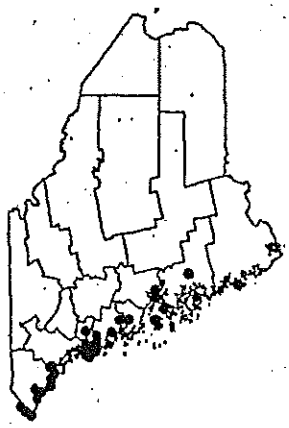
HGT1

Spartina Saltmarsh

State Rank S3

Distribution

South-coastal Maine, mostly southwest of Merrymeeting Bay (Eastern Broadleaf Forest Province). Extends southward along the Atlantic coast.



Landscape Pattern

Large Patch

Where to see it *(examples on conservation lands)*

Chewonki Marsh	Lincoln Co.
Back River Marsh, Winship Island WMA	Sagadahoc Co.
Swett Marsh, Flying Point Preserve	Sagadahoc Co.
Reid State Park	Sagadahoc Co.
Fort Popham State Historic Site	Sagadahoc Co.
Morse Mountain Preserve	Sagadahoc Co.
Rachel Carson NWR (many sites)	York Co.
Scarborough Marsh WMA	Cumberland Co.

Conservation and Management Considerations

Few of the larger saltmarshes in Maine are pristine, with some having been filled and others ditched at one time or another. With wetland protection in recent decades many of those that remain are reverting to a more natural hydrologic regime. Many of the remaining high-quality Spartina saltmarshes are on public land or private conservation land. With development of the uplands that border these marshes, maintenance of appropriate wetland buffers can help reduce degradation that could result from adjacent land uses.

Cross-references to Other Classifications

New Hampshire Synonymy	*(Name, State Rank)*
Low salt marsh	S3
High salt marsh	S3
Coastal salt pond marsh	S1
Low brackish tidal river-bank marsh	S1S2

National Veg. Classification Synonymy	*(Code, Name, Global Rank)*	
CEGL004192	Spartina alterniflora / (Ascophyllum nodosum) Acadian Herbaceous Vegetation	G5

Literature References

Jacobson and Jacobson 1989

Niering and Warren 1980

Nixon 1982

Teal 1986

Platanthera flava (R. Br. ex Ait. f.) Luer

Pale Green Orchis

Habitat: Swampy woods, bottomlands, swales, and wet shores. [Non-tidal rivershore (non-forested, seasonally wet); Open wetland, not coastal nor rivershore (non-forested, wetland)]

Range: Nova Scotia and New Brunswick, southern Ontario, Minnesota south to upland Virginia, Tennessee to Missouri.

Phenology: In Maine, flowers in July.

Family: Orchidaceae

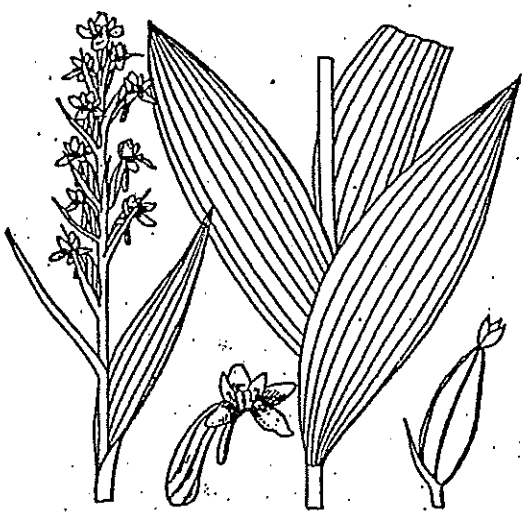


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: Members of the genus *Platanthera* are known by their uniformly colored, spurred flowers. The lowermost petal, called the labellum, is highly modified in these orchids and does not resemble the other sepals and petals. *Platanthera flava* grows 10-60 cm high with several large, alternate leaves along the stem, terminating in a compact, slender floral raceme. The long-lasting greenish and fragrant flowers have a slender spur, longer than the lip (the larger, modified, lower petal). The oblong lip curving under the flower is neither 3-lobed nor fringed but has a tubercle (a fin-like protuberance) near the center. The northern variety, *herbiola*, is distinguished from the southern, typical variety (which is not known to occur in Maine but does occur in Nova Scotia) by its large leaves extending up the stem and floral bracts more than twice as long as the flowers.

Ecological characteristics: The habitat in which this orchid is found is quite variable across the species's range. In some parts, it is most frequent in low wet woods where it may stand in shallow water thick with decaying leaves; in others, it may be found in dry sterile soil or salt marshes. In our area it is most often found in the damp circumneutral soil of either ledgy river shores or alluvial woods. The tubercle on the lower lip and a matching ridge on the roof of the flower divide the entrance of the nectary into two channels which direct the small moth and mosquito pollinators under one or the other of the diverging anther-sacs.

Synonyms: Represented in Maine by the variety *herbiola* (R.Br.) Luer; species formerly known *Habenaria flava*.

Rarity of *Platanthera flava*

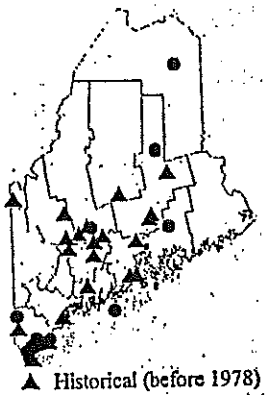
State Rank:	S2	Imperiled in Maine because of rarity or vulnerability to further decline.
New England Rank:	None	
Global Rank:	G4T4Q	Species and subspecies both widespread, abundant, and apparently secure globally, but with cause for long-term concern (questionable taxonomy).

Status of *Platanthera flava*

Federal Status:	None	No Federal Status.
State Status*:	None	No State Status.
Proposed State Status:**	Special Concern	Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.

Known Distribution in Maine:



▲ Historical (before 1978)
● Recent (1978 - present)
One symbol may represent multiple occurrences or several towns

This rare plant has been documented from a total of 31 town(s) in the following county(ies): Aroostook, Cumberland, Franklin, Hancock, Kennebec, Knox, Lincoln, Oxford, Penobscot, Piscataquis, Somerset, Waldo, York.

Dates of documented observations are: 1892 (2), 1895, 1896, 1902, 1906, 1907, 1913, 1916 (6), 1923 (2), 1933, 1935 (2), 1960, 1975, 1979, 1983, 1984 (3), 1987 (3), 1988, 1989 (2), 198X, 1990, 1991, 1996 (3), 1997

Reason(s) for rarity:
In Maine, habitat depletion.

Conservation considerations:
Maintain hydrologic integrity of its rivershore habitat, including the natural disturbance by water and ice. Orchids are popular among some speciality gardeners, and populations are vulnerable to unscrupulous or uneducated collectors. Plants dug from the wild usually do not survive; moreover, removing these plants harms the natural population and may cause its eventual disappearance. This plant has not been propagated successfully, and any plants offered for sale have been dug from the wild.

The information in this fact sheet was downloaded from the Natural Areas Division's Biological and Conservation Database on 08 FEB 1999. We are grateful to our Botanical Advisory Group for additional information on particular species, and in particular, to Arthur Haines for his assistance with identifying characteristics and taxonomic questions. Nomenclature follows Haines and Vining's *Flora of Maine* (V.F. Thomas Press, 1998); where older works refer to a plant by another name, it is given under "Synonyms". The Natural Areas Division, within the Department of Conservation, maintains the most comprehensive source of information on Maine's rare or endangered plants and rare or exemplary natural communities, and is a member of the Association for Biodiversity Information.

If you know of locations for this plant or would like more information on this species,
please contact the Natural Areas Division
State House Station 93, Augusta, Maine 04333; telephone (207) 287-8044.

DEPARTMENT OF CONSERVATION
MAINE

Maine Department of Conservation
Natural Areas Division

Rare Plant Fact Sheet
PDSCR010H0

Agalinis maritima (Raf.) Raf.

Saltmarsh False-foxglove

Habitat: Saltmarshes. [Tidal wetland (non-forested, wetland)]

Range: Confined to saltmarshes of the Atlantic coast from Maine southward to Florida.

Phenology: Flowers in late summer.

Family: Orobanchaceae

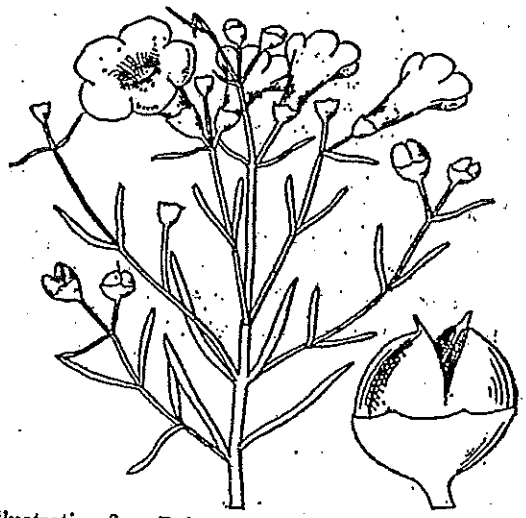


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: Like its more common relative purple gerardia (*A. paupercula*), the plant has five-petaled, bell-shaped flowers borne erect at the tips of the branched stems. Saltmarsh false-foxglove may be distinguished by its distinct preference for saltmarshes and by its leaves, which are thick and succulent, linear in shape and about 2-3 cm long. As it grows less than 40 cm high, it is often almost concealed by the surrounding vegetation.

Ecological characteristics: Can occur in large populations in intact saltmarshes.

Synonyms: Sometimes referred to by its former name, *Gerardia maritima*.

Rarity of *Agalinis maritima*

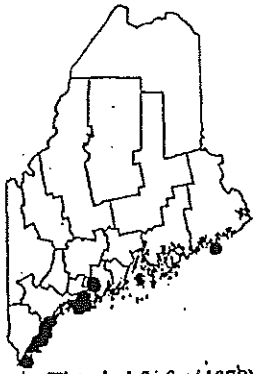
State Rank:	S2	Imperiled in Maine because of rarity or vulnerability to further decline.
New England Rank:	None	
Global Rank:	G5	Demonstrably widespread, abundant, and secure globally.

Status of *Agalinis maritima*

Federal Status:	None.	No Federal Status.
State Status*:	None	No State Status.
Proposed State Status:**	Special Concern	Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.

Known Distribution in Maine:



▲ Historical (before 1978)
● Recent (1978 - present)
One symbol may represent multiple occurrences or several towns

This rare plant has been documented from a total of 17 town(s) in the following county(ies): Cumberland, Lincoln, Sagadahoc, Washington, York.

Dates of documented observations are: 1916, 1960, 1981, 1982 (7), 1985, 1986, 1990 (3), 1992 (2), 1996 (3), 1998

Reason(s) for rarity:

Reaches its northern range limit in southern Maine.

Conservation considerations:

This plant persists well as long as the natural hydrology of its saltmarsh habitat is maintained.

The information in this fact sheet was downloaded from the Natural Areas Division's Biological and Conservation Database on 04 FEB 1999. We are grateful to our Botanical Advisory Group for additional information on particular species, and in particular, to Arthur Haines for his assistance with identifying characteristics and taxonomic questions. Nomenclature follows Haines and Vining's *Flora of Maine* (V.F. Thomas Press, 1998); where older works refer to a plant by another name, it is given under "Synonyms". The Natural Areas Division, within the Department of Conservation, maintains the most comprehensive source of information on Maine's rare or endangered plants and rare or exemplary natural communities, and is a member of the Association for Biodiversity Information.

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DEPARTMENT OF CONSERVATION
MAINE

Maine Department of Conservation
Natural Areas Division

Rare Plant Fact Sheet
PDAST3P0K0

Eupatorium dubium Willd. ex Poir.

Eastern Joe-pye Weed

Habitat: Swamps, damp thickets and shores. [Open wetland, not coastal nor rivershore (non-forested, wetland); Old field / roadside (non-forested, wetland or upland)]

Range: Nova Scotia and southern Maine to eastern New York, south to South Carolina. Should be searched for carefully in York County wetland edges; may have been overlooked because of its resemblance to the very common species.

Phenology: Flowers late July - October (southwest).

Family: Asteraceae .

Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed. Image shown here is *Eupatorium purpureum*.

Aids to Identification: Eastern Joe-Pye weed looks much like the closely related and abundant spotted Joe-Pye weed, with its dusty-purple flower clusters topping tall (up to 1 m), purple-spotted stems whose leaves are borne in whorls of three to five. Eastern Joe-Pye weed is distinguished by its leaves which have three major veins from the base of the leaf (not one) and are broader than those of the common species. The flower cluster in *E. dubium* is rounded on top, compared to that of *E. maculatum* which is very flat. *E. dubium* could also be confused with another species which is rare in Maine, *E. fistulosum* or trumpetweed. The leaves in *E. fistulosum* are narrower and with only one prominent vein from the base, as in the common species, and the stem is hollow. The three species grow in similar habitats.

Ecological characteristics: This species is currently known in Maine only from damp, open areas where the openings are artificially-maintained, such as roadside ditches. Associates include blue-joint grass (*Calamagrostis canadensis*), tussock sedge (*Carex stricta*), alder (*Alnus incana*), and jewelweed (*I. capensis*).

Synonyms:

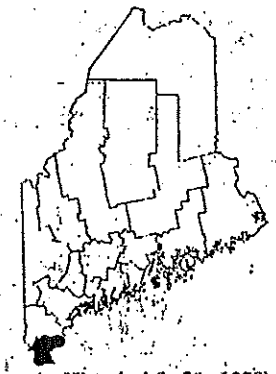
Rarity of *Eupatorium dubium*

State Rank:	S1	Critically imperiled in Maine because of extreme rarity or vulnerability to extirpation.
New England Rank:	None	
Global Rank:	G5	Demonstrably widespread, abundant, and secure globally.

Status of *Eupatorium dubium*

Federal Status:	None	No Federal Status.
State Status*:	Endangered	
Proposed State Status:**	Threatened	Rare and, with further decline, could become endangered; or federally listed as Threatened. Listing criteria met: At edge of range, Vulnerable to human activity

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.



▲ Historical (before 1978)
● Recent (1978 - present)
One symbol may represent multiple occurrences or several towns

Known Distribution in Maine:

This rare plant has been documented from a total of 6 town(s) in the following county(ies): York.

Dates of documented observations are: 1893, 1921, 1992 (2), 1993 (3), 1997 (3)

Reason(s) for rarity:

At northern limit of range, not rare southward.

Conservation considerations:

This plant occurs in small wetlands or moist pockets along roadsides in extreme southern Maine. Some road maintenance is obviously compatible with the species, but populations could be vulnerable to road-widening or extensive shoulder work.

The information in this fact sheet was downloaded from the Natural Areas Division's Biological and Conservation Database on 05 FEB 1999. We are grateful to our Botanical Advisory Group for additional information on particular species, and in particular, to Arthur Haines for his assistance with identifying characteristics and taxonomic questions. Nomenclature follows Haines and Vining's *Flora of Maine* (V.F. Thomas Press, 1998); where older works refer to a plant by another name, it is given under "Synonyms". The Natural Areas Division, within the Department of Conservation, maintains the most comprehensive source of information on Maine's rare or endangered plants and rare or exemplary natural communities, and is a member of the Association for Biodiversity Information.

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DEPARTMENT OF CONSERVATION
MAINE

Calamagrostis cinnoides W. Bart.

Small Reed-grass

Habitat: Open areas: bogs, peaty meadows, wet rocks and shores. [Old field/roadside (non-forested, wetland or upland)]

Range: Nova Scotia, coastal states from Maine to Georgia, and less often inland to West Virginia, Ohio, Kentucky, and Tennessee.

Phenology: Fruits August - October.

Family: Poaceae

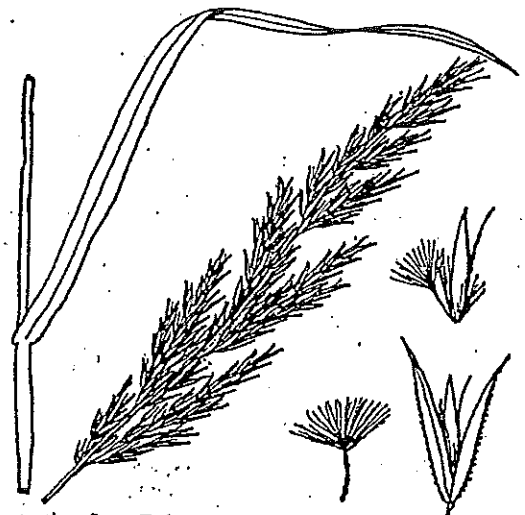


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: Identification of species of the genus *Calamagrostis* is usually difficult and dependent upon rather technical characters. They are all perennial grasses with long, narrow leaves, and 1-flowered spikelets with a tuft of hairs at the base of the lemma. This particular species grows to 0.6-1.2 meters. It is stout and smooth and the main leaf blades are 5-10 mm wide. The flowering cluster is dense and erect, 10-20 cm long, and the awn (a slender bristle) is attached above the middle of the lemma.

Ecological characteristics: Very little is known about the ecological characteristics of this species in Maine. It grows in open areas and clearings. Known occurrences have a patchy distribution, forming clones in open, sandy soil wetlands.

Synonyms:

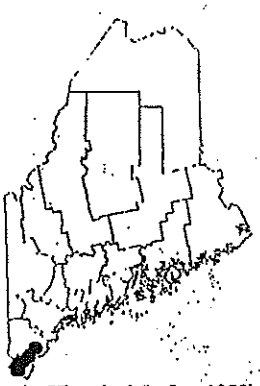
Rarity of *Calamagrostis cinnoides*

State Rank:	S2	Imperiled in Maine because of rarity or vulnerability to further decline.
New England Rank:	None	
Global Rank:	G5	Demonstrably widespread, abundant, and secure globally.

Status of *Calamagrostis cinnoides*

Federal Status:	None	No Federal Status.
State Status*:	None	No State Status.
Proposed State Status:**	Special Concern	Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.



▲ Historical (before 1978)
● Recent (1978 - present)
One symbol may represent multiple occurrences or several towns

Known Distribution in Maine:

This rare plant has been documented from a total of 6 town(s) in the following county(ies): York.

Dates of documented observations are: 1938, 1995 (6), 1996 (2), 1997

Reason(s) for rarity:

At northern limit of range.

Conservation considerations:

Currently known to occur in robust populations in a human-maintained shrub/herb habitat; management prevents encroachment of trees.

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DEPARTMENT OF CONSERVATION
MAINE

Maine Department of Conservation
Natural Areas Division

Cornus florida L.

Flowering Dogwood

Habitat: Acidic woods. [Hardwood to mixed forest (forest, upland)]

Range: Florida to Texas and Mexico, north to southern Maine, and west to southern Ontario and Kansas.

Phenology: Flowers March - June. Fruits August - November.

Family: Cornaceae

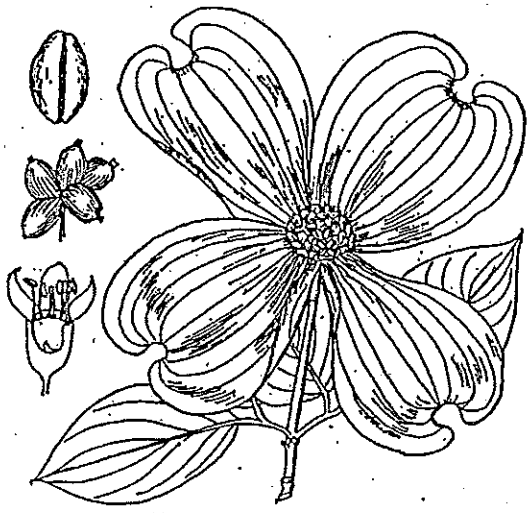


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: Flowering dogwood is a small tree, growing to 10 m, with opposite leaves, very rough bark, and mostly dark purple twigs and branchlets. The most conspicuous character is the presence of 4-6 large white (occasionally pink) bracts which surround the small clusters of flowers. It is the only dogwood in Maine that is both woody and has red fruits.

Ecological characteristics: Only one persistent population of flowering dogwood is known to remain in Maine; another population has been decimated by road construction with the remaining few trees in poor condition.

Synonyms: Referred to as *Cynoxylon florida* in some very old treatments.

Rarity of *Cornus florida*

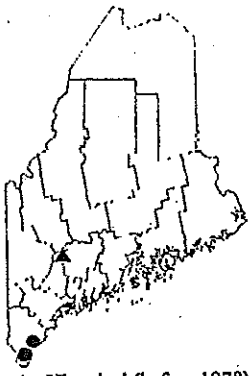
State Rank:	S1	Critically imperiled in Maine because of extreme rarity or vulnerability to extirpation.
New England Rank:	None	
Global Rank:	G5	Demonstrably widespread, abundant, and secure globally.

Status of *Cornus florida*

Federal Status:	None	No Federal Status.
State Status*:	Endangered	
Proposed State Status:**	Endangered	Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered. Listing criteria met: At edge of range, Vulnerable to human activity

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.

Known Distribution in Maine:



▲ Historical (before 1978)
● Recent (1978 - present)
One symbol may represent multiple occurrences or several towns

This rare plant has been documented from a total of 3 town(s) in the following county(ies): Kennebec, York.

Dates of documented observations are: 1874, 1990, 1991, 1992

Reason(s) for rarity:

At northern limit of range; not rare southwards.

Conservation considerations:

This plant is restricted statewide to southern Maine, and conversion of its habitat to residential and commercial use is partly responsible for its rarity. It becomes increasingly common southward.

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DEPARTMENT OF CONSERVATION
MAINE

Maine Department of Conservation
Natural Areas Division

Rare Plant Fact Sheet
PDAQU010K0

Ilex laevigata (Pursh) Gray

Smooth Winterberry Holly

Habitat: Wetlands, wooded swamps. [Forested wetland]

Range: Maine and New Hampshire to Pennsylvania and Georgia.

Phenology: Flowers May - June, berries appear in early June.

Family: Aquifoliaceae

Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: Smooth winterberry holly is a deciduous shrub which resembles the closely related common winterberry (*Ilex verticillata*) found throughout Maine. It grows up to 4 m high, with oval leaves which are finely toothed along the edges and shiny on their upper surface (the common winterberry has dull leaves). There are separate male and female flowers, usually on separate plants, in the leaf axils. The staminate flowers occur singly or two together, and are borne on long stalks, while the pistillate flowers are solitary and on shorter stalks. The ovule-bearing carpellate flowers develop into small, red berries. It is very similar to, and can occur near, the common winterberry (*Ilex verticillata*), but can be distinguished by the entire sepal margins (ciliate in *Ilex verticillata*).

Ecological characteristics: Known in southern Maine from swamps and thickets both along the coast and inland.

Synonyms:

Rarity of *Ilex laevigata*

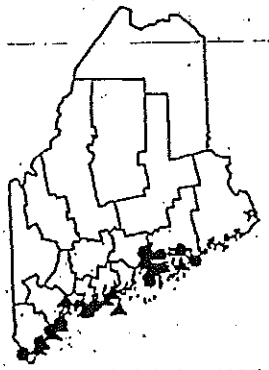
State Rank:	S2	Imperiled in Maine because of rarity or vulnerability to further decline.
New England Rank:	None	
Global Rank:	G5	Demonstrably widespread, abundant, and secure globally.

Status of *Carex silicea*

Federal Status:	None	No Federal Status.
State Status*:	None	No State Status.
Proposed State Status**:	Special Concern	Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.

Known Distribution in Maine:



▲ Historical (before 1978)
● Recent (1978 - present)
One symbol may represent multiple occurrences or several towns

This rare plant has been documented from a total of 24 town(s) in the following county(ies): Cumberland, Hancock, Knox, Lincoln, Sagadahoc, Waldo, York.

Dates of documented observations are: 1901, 1919, 1928, 1935, 1940, 1941, 1949, 1962, 1977 (10), 1991 (4), 1992 (8), 1995, 1996 (2), 1997, 1998 (5)

Reason(s) for rarity:

Habitat somewhat restricted; but searches have turned up small populations of this species in several saltmarshes, suggesting that it may have been overlooked and not as rare as was previously thought.

Conservation considerations:

Prevent degradation of saltmarsh habitat from adjacent land uses. Populations along dune edges could be threatened by heavy recreational use.

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DEPARTMENT OF CONSERVATION
MAINE

Maine Department of Conservation
Natural Areas Division

PITCH PINE BOG

General Description:
These bogs are sparsely forested peatlands in which the dominant tree species is pitch pine. Typical bog conditions predominate, with acidic soil and water, and abundant peat moss covering the ground and forming the substrate. Evergreen heath shrubs are common, particularly huckleberry.

Characteristic and Rare Species List:

Trees	
Betula populifolia	Gray birch
Pinus rigida	Pitch pine
Shrubs	
Chamaedaphne calyculata	Leatherleaf
Gaylussacia baccata	Black huckleberry
Gaylussacia dumosa	Dwarf huckleberry
* *Ilex laevigata*	Smooth winterberry holly
Kalmia angustifolia	Sheep laurel
Vaccinium corymbosum	Highbush blueberry
Herbs	
Carex trisperma	Three-seeded sedge
Bryoid	
Sphagnum sp./spp.	Peat moss

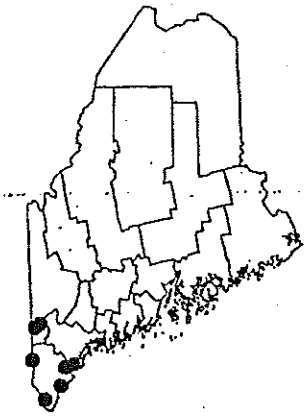
*indicates rare plant in Maine

Chamaedaphne calyculata

Diagnostic Characteristics:
Wetland with abundant peat and low shrubs, sparsely forested by pitch pine.

Similar Types:
There are several other peatland community types which have similarities with the pitch pine bog. However, the predominance of pitch pine makes this type unique and distinct from other bogs.

Pattern and Distribution:
This bog is found in the southern coastal region of Maine, along the coastal plain. Typical examples range from 20-40 acres in size, however, one site reaches 100 acres.



State Rank: S1S2: Critically imperiled in Maine because of rarity.

Conservation considerations:
The strong development pressures in the southern region of the state threaten to decrease the acreage of unprotected sites, or to degrade their landscape surroundings with possible indirect effects.

Examples:

Brownfield Wildlife Management Area	Oxford County
Scarborough Wildlife Management Area	Cumberland County
Rachel Carson National Wildlife Refuge	York County
Saco Heath - The Nature Conservancy	York County

Synonomy:
New Hampshire Natural Heritage Inventory, Community Type(s):
Coastal/Southern Acidic Fen

The Nature Conservancy, Community Type(s):
II.A.4.N.f Pitch Pine Woodland Swamp (6149)

Society of American Foresters, Forest Cover Types:
45 - Pitch Pine

If you know of locations for this community or would like more information, please contact the Natural Areas Division
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DEPARTMENT OF CONSERVATION
MAINE

Maine Department of Conservation
Natural Areas Division

Iris prismatica Pursh ex Ker-Gawl.

Slender Blue Flag

Habitat: Brackish or saline to fresh marshes, sands, shores, or meadows, along coast. [Tidal wetland (non-forested, wetland)]

Range: Coastal; Maryland to southern Maine. Rare in New Hampshire as well; not rare southward.

Phenology: Flowers June - mid July.

Family: Iridaceae

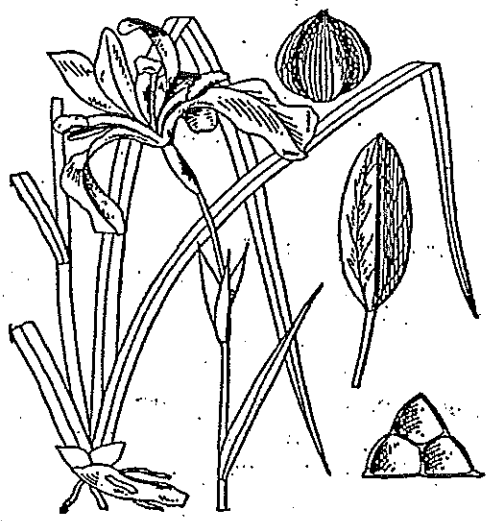


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: Slender blue-flag is a close relative of the common blue-flag or wild iris (*I. versicolor*). Slender blue-flag's primary distinguishing feature is its narrow leaves, which are 3-6 mm wide, compared to 1.2-2.5 cm wide in *I. versicolor*.

Ecological characteristics: Slender blue-flag grows in saltmarshes, near the upland borders, and in wet near-coastal meadows. Associates in Maine include common blue-flag (*I. versicolor*), sweetgrass (*Hierochloe odorata*), wild rose (*Rosa* spp.), bayberry (*Myrica pensylvanica*), and other grasses and sedges.

Synonyms:

Rarity of *Iris prismatica*

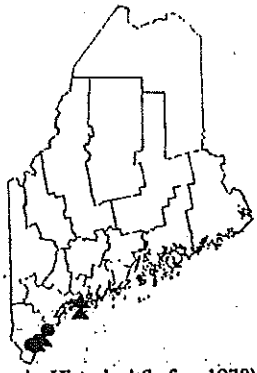
State Rank:	S2	Imperiled in Maine because of rarity or vulnerability to further decline.
New England Rank:	None	
Global Rank:	G4G5	Widespread, abundant, and apparently secure globally but possibly with cause for long-term concern.

Status of *Iris prismatica*

Federal Status:	None	No Federal Status.
State Status*:	Threatened	
Proposed State Status:**	Threatened	Rare and, with further decline, could become endangered; or federally listed as Threatened. Listing criteria met: At edge of range, Declining populations

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.

Known Distribution in Maine:



▲ Historical (before 1978)
● Recent (1978 - present)
One symbol may represent multiple occurrences or several towns

This rare plant has been documented from a total of 5 town(s) in the following county(ies): Sagadahoc, York.

Dates of documented observations are: 1879, 1922, 1947, 1957, 1987 (3), 1988 (5), 1989 (2), 1995

Reason(s) for rarity:

At northern limit of range; naturally restricted habitat; some wetlands that formerly supported this species have been filled and/or drained.

Conservation considerations:

Several historic locations appear to have been lost, but the plant appears fairly well protected in the saltmarshes where it remains. Continued persistence will require maintaining the integrity of the saltmarsh habitat.

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DEPARTMENT OF CONSERVATION
MAINE

Maine Department of Conservation
Natural Areas Division

Rare Plant Fact Sheet
PDASTOTOU0

Aster divaricatus (Nutt.) Torr. & Gray

White Wood Aster

Habitat: Dry woods and clearings. [Hardwood to mixed forest (forest, upland)]

Range: Southern Maine to Ohio, south to Georgia, and west to Tennessee.

Phenology: Flowers September - October.

Family: Asteraceae

Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: White wood aster has a flattish cluster of white flowers, each 2-3 cm wide. The lower stem leaves are heart-shaped with coarse teeth, and the plant ranges from 0.3-1 m in height. It is distinguished from similar species by the lack of glandular hairs on the flower heads, and the absence of sterile leaf tufts.

Ecological characteristics: In Maine this species grows in well-drained, open, mixed woods.

Synonyms:

Rarity of *Aster divaricatus*

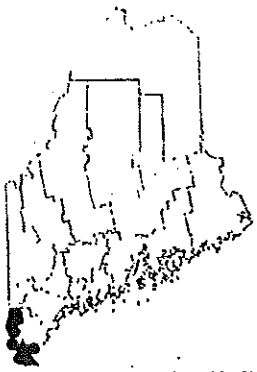
State Rank:	S2	Imperiled in Maine because of rarity or vulnerability to further decline.
New England Rank:	None	
Global Rank:	G5	Demonstrably widespread, abundant, and secure globally.

Status of *Aster divaricatus*

Federal Status:	None	No Federal Status.
State Status*:	Threatened	
Proposed State Status:**	Threatened	Rare and, with further decline, could become endangered; or federally listed as Threatened. Listing criteria met: At edge of range, Declining populations, Vulnerable to human activity

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.

Known Distribution in Maine:



▲ Historical (before 1978)
● Recent (1978 - present)
One symbol may represent multiple occurrences or several towns

This rare plant has been documented from a total of 9 town(s) in the following county(ies): York.

Dates of documented observations are: 1922, 1958, 1983, 1985, 1993 (2), 1995, 1996 (6), 1998

Reason(s) for rarity:

At northern limit of range, not rare southward.

Conservation considerations:

This plant is restricted statewide to southern Maine. Populations are vulnerable to conversion of their habitat to residential or commercial use, and several occur near roads where they could be affected by road maintenance activities.

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DEPARTMENT OF CONSERVATION
MAINE

Maine Department of Conservation
Natural Areas Division

Rare Plant Fact Sheet
PDAST5X0Q2

Liatris scariosa (L.) Willd.

Northern Blazing Star

Habitat: Dry grasslands, barrens, and woods openings. [Dry barrens (partly forested, upland)]

Range: Southern Maine to eastern New York, south to New Jersey and eastern Pennsylvania.

Phenology: Flowers July - September.

Family: Asteraceae

Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: A showy purple-flowered perennial growing from a bulb with a basal rosette of lanceolate leaves 0.5-3 cm broad. The numerous, stalked, thistle-like flowers form a loose spike above the linear stem leaves.

Ecological characteristics: *L. scariosa* is most often associated with sand barrens. Most of its stations in Maine are on sandy soil, and the largest Maine population is thriving on a grassland barren which is periodically burned.

Synonyms: Represented in Maine by variety *scariosa* Lunell. Formerly known as *Liatris borealis* and *Liatris scariosa* var. *novae-angliae*.

Rarity of *Liatris scariosa*

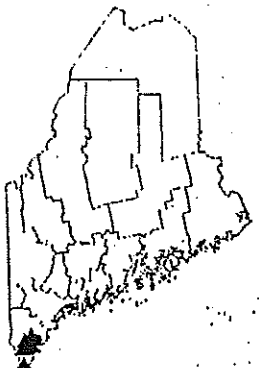
State Rank:	S1	Critically imperiled in Maine because of extreme rarity or vulnerability to extirpation.
New England Rank:	None	
Global Rank:	G5?T3	Species demonstrably widespread, abundant, and secure globally (uncertain). Subspecies rare or uncommon.

Status of *Liatris scariosa*

Federal Status:	None	No Federal Status.
State Status*:	Threatened	
Proposed State Status:**	Threatened	Rare and, with further decline, could become endangered; or federally listed as Threatened. Listing criteria met:

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.

Known Distribution in Maine:



▲ Historical (before 1978)
● Recent (1978 - present)
One symbol may represent multiple occurrences or several towns

This rare plant has been documented from a total of 6 town(s) in the following county(ies): York.

Dates of documented observations are: 1896, 1916, 1922, 1934, 1976, 1986, 1993, 1996 (2)

Reason(s) for rarity:

At northern limit of range, habitat limited. Research indicates that high levels of seed predation by a small moth may be a factor in declining populations rangewide.

Conservation considerations:

Controlled fire or prescribed burns may be an important management tool for northern blazing star. Fires control seed predator abundances and encourage recruitment of juvenile plants into resident populations.

The information in this fact sheet was downloaded from the Natural Areas Division's Biological and Conservation Database on 08 FEB 1999. We are grateful to our Botanical Advisory Group for additional information on particular species, and in particular, to Arthur Haines for his assistance with identifying characteristics and taxonomic questions. Nomenclature follows Haines and Vining's *Flora of Maine* (V.F. Thomas Press, 1998); where older works refer to a plant by another name, it is given under "Synonyms". The Natural Areas Division, within the Department of Conservation, maintains the most comprehensive source of information on Maine's rare or endangered plants and rare or exemplary natural communities, and is a member of the Association for Biodiversity Information.

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DEPARTMENT OF CONSERVATION
MAINE

Maine Department of Conservation
Natural Areas Division

Rare Plant Fact Sheet
PDCON040G0

Calystegia spithamaea (L.) Pursh

Upright Bindweed

Habitat: Sandy or rocky open soil, thin woods. [Dry barrens (partly forested, upland); Old field/roadside (non-forested, wetland or upland)]

Range: Quebec and Maine to Minnesota, south to Virginia and Missouri, and in the mountains of Georgia.

Phenology: Flowers June - August.

Family: Convolvulaceae

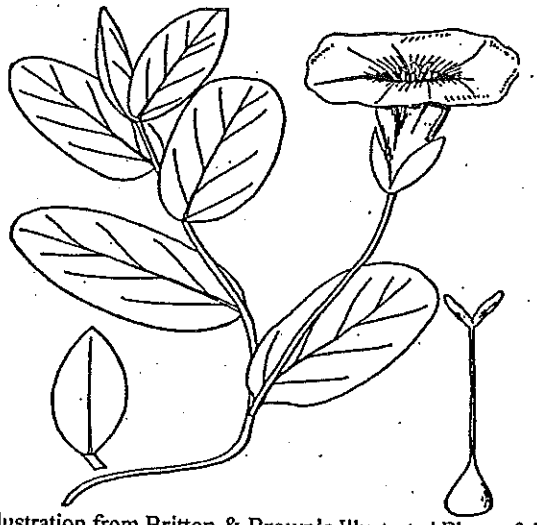


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: The stem of this perennial bindweed is weakly erect, with alternately arranged oblong leaves on short leaf-stalks. The large white or pink flowers are funnel shaped, on long flower stalks.

Ecological characteristics: In Maine this species is known to occur in sandplain grasslands and sandy floodplains. It sometimes occurs in hayfields, but is not closely related to the non-native and agressive common bindweed (*C. sepium*).

Synonyms: Formerly known as *Convolvulus spithameus*.

Rarity of *Calystegia spithamaea*

State Rank:	S1	Critically imperiled in Maine because of extreme rarity or vulnerability to extirpation.
New England Rank:	Division 2	Regionally rare plant: Fewer than 20 current (seen since 1970) occurrences within New England.
Global Rank:	G4G5	Widespread, abundant, and apparently secure globally but possibly with cause for long-term concern.

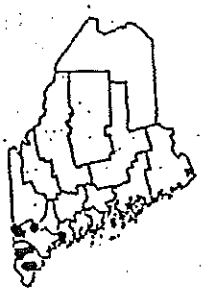
Status of *Calystegia spithamaea*

Federal Status:	None	No Federal Status.
State Status*:	Threatened	
Proposed State Status:**	Threatened	Rare and, with further decline, could become endangered; or federally listed as Threatened. Listing criteria met: At edge of range, Vulnerable to human activity

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.

Pattern and Distribution:

The pitch pine-scrub oak type is restricted to the southern portion of the state; the pitch pine heath type also occurs in southern Maine and barely reaches the midcoast region. Both communities may reach several hundred acres in size.



State Rank:

S1 Critically imperiled in Maine because of extreme rarity or vulnerability to extirpation.

Conservation Considerations:

This community type is dependent upon periodic fires to eliminate competing tree species and prevent succession to an oak-pine forest. Because of ouour history of fire supression, this forest type has become very rare. It also appears that large areas of this forest are required to maintain this community and its associated rare animal species. Naturally rare to begin with, most of the large sites in the state have been fragmented by permanent conversion to residential areas or to sand and gravel pits.

Examples:

Killick Pond Barrens	York County
Fryeburg Barrens	Oxford County
Waterboro Barrens	York County
Kennebunk Plains	York County
Brunswick Commons	Cumberland County

Synonomy:

New Hampshire Natural Heritage Inventory, Community Type(s):

Pitch Pine/Scrub Oak Woodland

The Nature Conservancy, Community Type(s):

II.A.4.N.a Pitch Pine - Blueberry - Huckleberry Woodland (5046)

II.A.4.N.a Pitch Pine - Scrub Oak - Ricegrass Woodland (6203)

Society of American Foresters, Forest Cover Type:

45 - Pitch Pine

If you know of locations for this community or would like more information, please contact the Natural Areas Division
State House Station 93, Augusta, Maine 04333; telephone (207) 287-8044.

DEPARTMENT OF CONSERVATION
MAINE

Sericocarpus asteroides (L.) B.S.P.

White-topped Aster

Habitat: Open woods and clearings. [Dry barrens (partly forested, upland)]

Range: Southern Maine to Michigan, south to Florida and west to Mississippi.

Phenology: Flowers July - August.

Family: Asteraceae

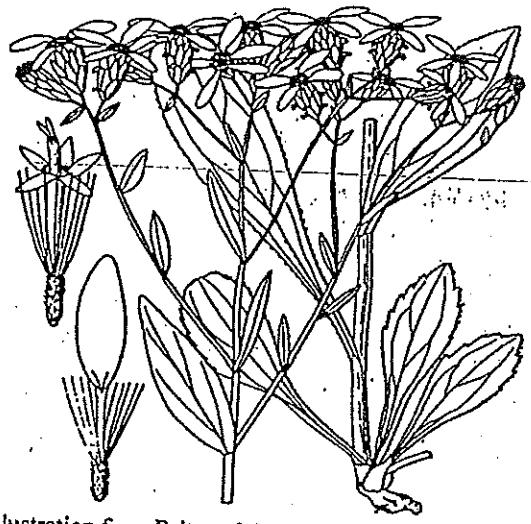


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: This perennial aster is characterized by its white, sometimes pink, flower clusters with only 4-8 ray flowers (most asters have many more), arranged in flat-topped clusters. At least some of the leaves are toothed, with the lower leaves sometimes enlarged. Technical characters for this species include the dense silky hairs on the fruits (cypselas) and the cartilaginous phyllaries.

Ecological characteristics: Known in Maine to occur in open grasslands.

Synonyms: Formerly known as *Aster paternus*.

Rarity of *Sericocarpus asteroides*

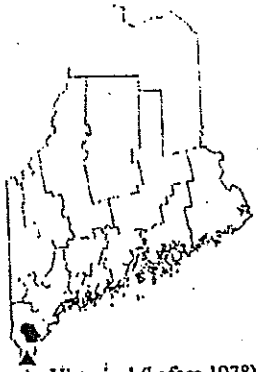
State Rank:	S1	Critically imperiled in Maine because of extreme rarity or vulnerability to extirpation.
New England Rank:	None	
Global Rank:	G5	Demonstrably widespread, abundant, and secure globally.

Status of *Sericocarpus asteroides*

Federal Status:	None	No Federal Status.
State Status*:	Threatened	
Proposed State Status:**	Endangered	Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered. Listing criteria met: Special habitat, At edge of range, Vulnerable to human activity

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.

Known Distribution in Maine:



▲ Historical (before 1978)
● Recent (1978 - present)
One symbol may represent multiple occurrences or several towns

This rare plant has been documented from a total of 4 town(s) in the following county(ies): York.

Dates of documented observations are: 1891, 1916, 1986, 1996

Reason(s) for rarity:
At northern limit of range.

Conservation considerations:
Heavy all-terrain vehicle use of the sandy habitats where this occurs may be detrimental to the plant populations.

The information in this fact sheet was downloaded from the Natural Areas Division's Biological and Conservation Database on 08 FEB 1999. We are grateful to our Botanical Advisory Group for additional information on particular species, and in particular, to Arthur Haines for his assistance with identifying characteristics and taxonomic questions. Nomenclature follows Haines and Vining's *Flora of Maine* (V.F. Thomas Press, 1998); where older works refer to a plant by another name, it is given under "Synonyms". The Natural Areas Division, within the Department of Conservation, maintains the most comprehensive source of information on Maine's rare or endangered plants and rare or exemplary natural communities, and is a member of the Association for Biodiversity Information.

If you know of locations for this plant or would like more information on this species, please contact the Natural Areas Division
State House Station 93, Augusta, Maine 04333; telephone (207) 287-8044.

DEPARTMENT OF CONSERVATION
MAINE

Allium canadense L.

Wild Garlic

Habitat: Alluvial woods, thickets, and meadows. [Forested wetland; Hardwood to mixed forest (forest, upland)]

Range: New Brunswick to North Dakota, south to Florida and Texas.

Phenology: Flowers in early summer.

Family: Liliaceae

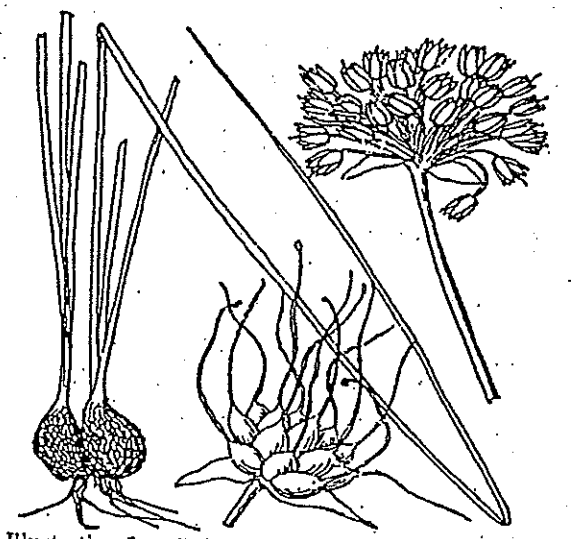


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: Tight clumps of soft, linear, not hollow, keeled leaves with a distinctly onion-like smell. The bulbs are 1-3 cm long and have a fibrous outer coat with diamond-shaped spaces between the nerves. The flowers are pink or white, but are often replaced by sessile bulblets.

Ecological characteristics: Usually found in rich wooded bottomlands (hardwood floodplain forests), in alluvial soils near streams. Vegetative reproduction, both by the inflorescence bulblets and underground bulbs, is common and the plant may become dominant, its leaves forming dense mats over small areas.

Synonyms:

Rarity of *Allium canadense*

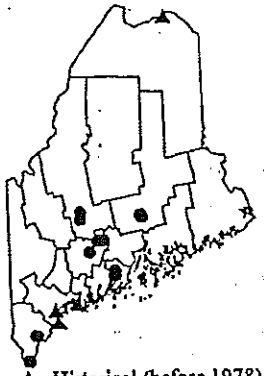
State Rank:	S2	Imperiled in Maine because of rarity or vulnerability to further decline.
New England Rank:	None	
Global Rank:	G5	Demonstrably widespread, abundant, and secure globally.

Status of *Allium canadense*

Federal Status:	None	No Federal Status.
State Status*:	None	No State Status.
Proposed State Status:**	Special Concern	Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

* The current official state status is based on 1988 data.
**Proposed state status based on current (1998) data.

Known Distribution in Maine:



▲ Historical (before 1978)
● Recent (1978 - present)
One symbol may represent multiple occurrences or several towns

This rare plant has been documented from a total of 14 town(s) in the following county(ies): Aroostook, Cumberland, Kennebec, Knox, Penobscot, Somerset, York.

Dates of documented observations are: 1918, 1920, 1921, 1938, 1982, 1983 (2), 1986 (2), 1990, 1991 (2), 1992 (2), 1995

Reason(s) for rarity:

At northern limit of its range, not rare southward.

Conservation considerations:

Effects of logging are not well known; partial removal of the canopy would be less likely to adversely affect the plant than would complete removal.

The information in this fact sheet was downloaded from the Natural Areas Division's Biological and Conservation Database on 04 FEB 1999. We are grateful to our Botanical Advisory Group for additional information on particular species, and in particular, to Arthur Haines for his assistance with identifying characteristics and taxonomic questions. Nomenclature follows Haines and Vining's *Flora of Maine* (V.F. Thomas Press, 1998); where older works refer to a plant by another name, it is given under "Synonyms". The Natural Areas Division, within the Department of Conservation, maintains the most comprehensive source of information on Maine's rare or endangered plants and rare or exemplary natural communities, and is a member of the Association for Biodiversity Information.

If you know of locations for this plant or would like more information on this species, please contact the Natural Areas Division
State House Station 93, Augusta, Maine 04333; telephone (207) 287-8044.

DEPARTMENT OF CONSERVATION
MAINE

APPENDIX D

Open Space Committee area evaluation worksheet:

Value, Threat, Protection, Access, Connectivity

1= High level
2 = Mid level
3 = Low level

Environment:

	Value	Threat	Protection		Connectivity
Branch Brook Corridor	1	3	1		1
Blueberry Plains near B. Brook	1	3	1		2
Estuary Area of B. Brook	1	2	2		2
Kennebunk River Corridor	1	2	2		2
Gooch's Creek/Lake Brook	2	1	3		2
Ward Brook/Alewive Pond Corridor	1	2	2		2
"Punky Swamp"	3	3	2		3
Mousam River West Corridor	1	2	2		1
Cold Water Brook	2	3	2		2
Day Brook	2	2	2		2
Wonder Brook	2	2	2		2
Mousam River East Corridor	1	2	2		2
Mousam River Estuary/Back Creek	1	2	2		1

Recreation:

	Value	Threat	Protection	Access	Connectivity
Downtown Kennebunk					
Parks & Rec facilities					1
Trails and Connections	1	3	1	1	
Water Access Points	1	3	2	2	
Lower Village	1	1	2	2	
Parks & Rec facilities					1
rails and Connections	1	3	2	2	
Water Access Points	1	1	2	2	
West Kennebunk Village	1	1	2	3	
Parks & Rec facilities					1
Trails and Connections	1	3	2	2	
Water Access Points	1	2	2	2	
Webber Hill Road/Cold Water Brook Area	1	2	2	2	
Parks & Rec facilities					2
Trails and Connections	1	3	2	2	
Water Access Points	2	2	2	2	
	2	2	2	2	

Open Space Committee area evaluation worksheet:

Value, Threat, Protection, Access, Connectivity

1= High level
2 = Mid level
3 = Low level

Town Character	Value	Threat	Protection	Access	Connectivity
Downtown Kennebunk					
Historic and Cultural value	1	2	2	1	2
Visual Corridors	1	1	3	1	
Scenic value	1	2	3	2	
Neighborhood Spaces	1	2	3	2	
Agricultural value	3	3	3	3	
Forest resource value	3	3	3	3	
Lower Village					
Historic and Cultural value	2	2	2	2	2
Visual Corridors	2	2	2	2	
Scenic value	2	2	2	2	
Neighborhood Spaces	3	1	2	2	
Agricultural value	3	3	3	3	
Forest resource value	3	3	3	3	
West Kennebunk Village					
Historic and Cultural value	2	2	2	2	2
Visual Corridors	1	2	3	2	
Scenic value	2	2	3		
Neighborhood Spaces	2	2	2	2	
Agricultural value	2	2	2	2	
Forest resource value	2	2	3	2	
Webber Hill Road/Cold Water Brook Area					
Historic and Cultural value	2	3	3	2	2
/isual Corridors	2	1	2	2	
Scenic value	2	3	2	2	
Neighborhood Spaces	2	2	2	2	
Agricultural value	2	2	3	2	
Forest resource value	2	2	3	2	
Rt.35/Alewive Area					
Historic and Cultural value	1	1	2	2	3
Visual Corridors	1	2	2	3	
Scenic value	1	1	1	2	
Neighborhood Spaces	2	2	2	3	
Agricultural value	1	1	3	1	
Forest resource value	1	1	3	3	