

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

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

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

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

- 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	<u>K'Bunk</u>	<u>251</u>
Wage earner #2	<u>Within 15 Mile radius</u>	<u>203</u>
Wage earner #3	<u>Outside 15 Mile radius</u>	<u>202</u>
Wage earner #4	<u>Retired</u>	<u>316</u>
(or) Retired	_____	

Please list ages of all household members:

Member #1 _____	Member #5 _____
Member #2 _____	Member #6 _____
Member #3 _____	Member #7 _____
Member #4 _____	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).

If you have additional comments that you think would be helpful to the Planning Board, please feel free to attach them here or send 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
Meeting introduction: facilitator |
| 8:45 | 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
<u>Brief report out on some of the ideas from the groups</u> 15 minutes |
| 10:30 | 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 not 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 sewerred 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.

Back to:

[State List](#) [State and Federal List](#) [Federal List](#) [Birds](#)

[Home](#), [Online Store](#), [Licenses & Registrations](#), [Hunting & Trapping](#),
[Fishing](#), [Recreational Vehicles](#), [Wildlife](#), [Education](#),
[What's New?](#), [About Us](#), [Laws & Rules](#), [Links](#)

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, Least 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.

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

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

Olmer, 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, 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



Home, Online Store, Licenses & Registrations, Hunting & Trapping,
Fishing, Recreational Vehicles, Wildlife, Education,
What's New?, About Us, Laws & Rules, Links

last updated 07/25/03

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 in 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 1/4 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 be 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 nest 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

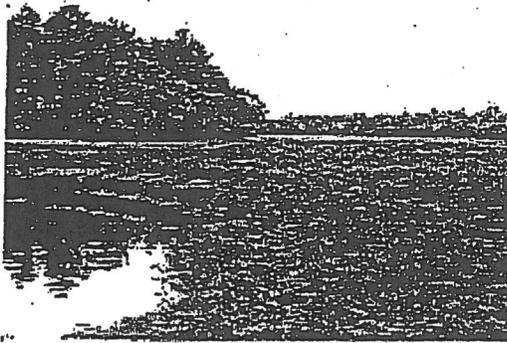
peak of agricultural development, they were common in many large agricultural fields and pastures. After 1950, declining agriculture and increasing reforestation resulted in widespread loss of suitable breeding habitat. In 1997, about 148 pairs of upland sandpipers occupied 57 grassland/barren sites 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.
-

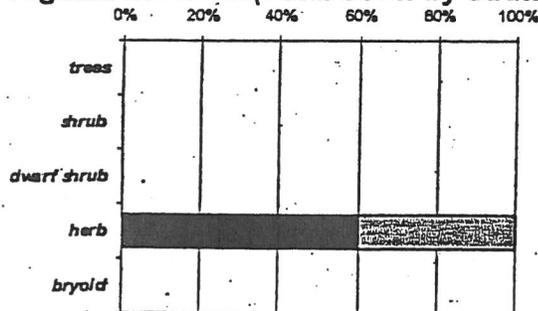
Large saltmarshes dominated by expanses of saltmeadow cordgrass, smooth cordgrass, and/or black-grass. Shrubs are virtually absent, and the herbaceous cover is usually >85%. Saltmeadow cordgrass gives a meadow-like appearance over much of the marsh; at slightly higher elevations within the marsh, black-grass 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

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

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.

Distribution

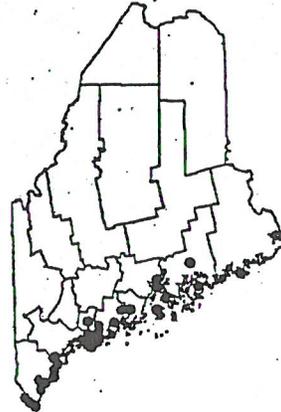
South-coastal Maine; mostly southwest of Merymeeting Bay (Eastern Broadleaf Forest Province). Extends southward along the Atlantic coast.

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	<i>Spartina alterniflora</i> / (<i>Ascophyllum nodosum</i>)	G5
	Acadian Herbaceous Vegetation	

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

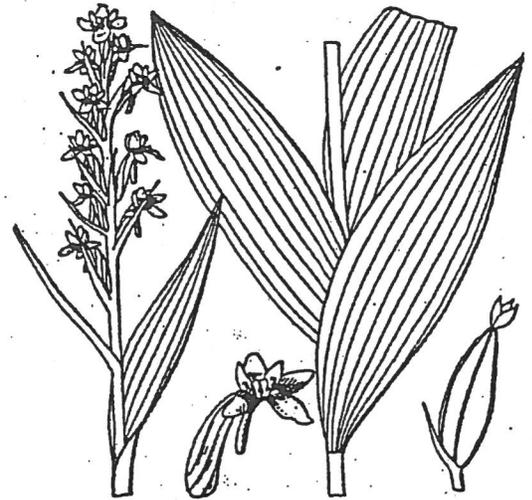


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

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).

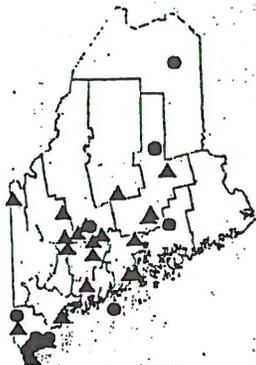
Status of *Platanthera flava*

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.





Maine Department of Conservation
Natural Areas Division

Agalinis maritima (Raf.) Raf.

Saltmarsh False-foxtail

- 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-foxtail 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*

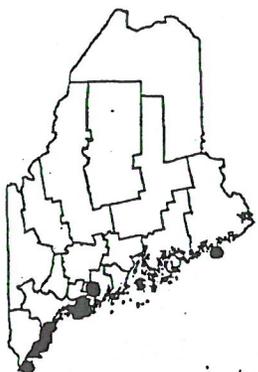
- | | | |
|--------------------------|------|---|
| State Rank: | S2 | Imperiled in Maine because of rarity or vulnerability to further decline. |
| New England Rank: | None | |
| Global Rank: | G5 | Demonstrably widespread, abundant, and secure globally. |

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.

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.





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.

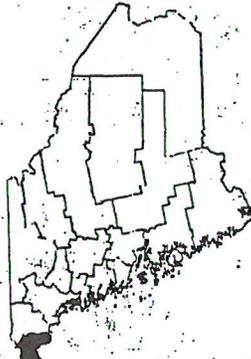
Status of *Eupatorium dubium*

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.

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)

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

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.

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.





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

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.



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

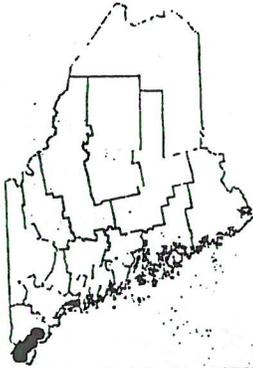
Status of *Calamagrostis cinnoides*

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.

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: 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.

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.





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

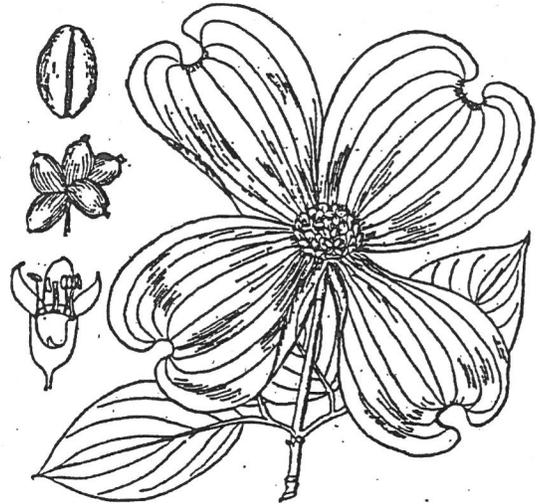


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

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

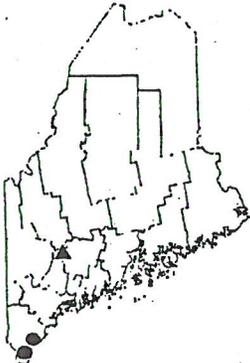
* The current official state status is based on 1988 data.

** Proposed state status based on current (1998) data.

Known Distribution in Maine:

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



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

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.

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.





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. |

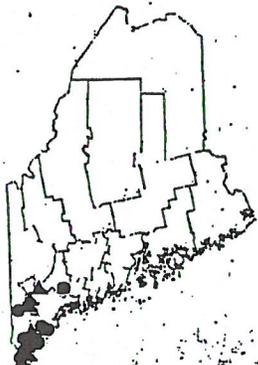
Status of *Ilex laevigata*

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 16 town(s) in the following county(ies): Androscoggin, Cumberland, Oxford, York.

Dates of documented observations are: 1849, 1916 (3), 1933 (2), 1936, 1978, 1979 (2), 1984, 1985 (2), 1986, 1988, 1989 (6), 198X, 1991, 1996, 1997

Reason(s) for rarity:

At northern limit of its range.

Conservation considerations:

This plant is restricted statewide to southern Maine. Some populations are vulnerable to conversion of their habitat to residential or commercial use; other populations, located further within larger wetlands, are more secure.

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.

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.





Carex silicea Olney

Sea-beach Sedge

- Habitat:** Maritime sands and rocks. [Tidal wetland (non-forested, wetland); Rocky coastal (non-forested, upland)]
- Range:** Southwest Newfoundland, Magdalen Islands (Quebec), and Gaspé Peninsula - Quebec to Maryland. Not rare southward.
- Phenology:** Flowers June - August; fruits July - August.
- Family:** Cyperaceae

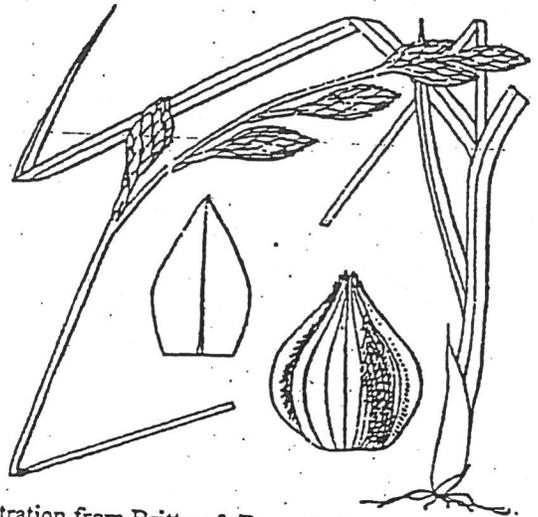


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

Aids to Identification: Members of this genus can be difficult to identify without careful examination of microscopic features and knowledge of general groups of species. *C. silicea* is one of the section *Ovales* (within the genus), a group distinguished by its dense roundish heads of fruits and perigynia with thin, winged margins. Among Maine *Ovales*, *C. silicea* can be distinguished by its habitat, by the distinct auricles at the base of the leaf blade, and by the perigynia which are both narrow (< 2 mm wide) and broadest above the middle. The plant tends to grow in stiff clumps, with floral scales as long as perigynia and stiff, often involute and glaucous leaves. The only other *Ovales* commonly found in coastal habitats is *Carex hormathodes*; however, its floral scales are shorter than the perigynia, its leaves lack prominent auricles, are green, flat, and not as rigid.

Ecological characteristics: Known to be fairly widely distributed in Maine saltmarshes and sand beaches, but rarely in large numbers. Typical of the higher elevation areas near the high tide line, and sometimes, backdune areas. Found as part of the sand dune community or saltmarsh community.

Synonyms:

Rarity of *Carex silicea*

State Rank:	S3	Rare in Maine.
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:



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)

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

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.

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.





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

<i>Betula populifolia</i>	Gray birch
<i>Pinus rigida</i>	Pitch pine

Shrubs

<i>Chamaedaphne calyculata</i>	Leatherleaf
<i>Gaylussacia baccata</i>	Black huckleberry
<i>Gaylussacia dumosa</i>	Dwarf huckleberry
* <i>Ilex laevigata</i>	Smooth winterberry holly
<i>Kalmia angustifolia</i>	Sheep laurel
<i>Vaccinium corymbosum</i>	Highbush blueberry

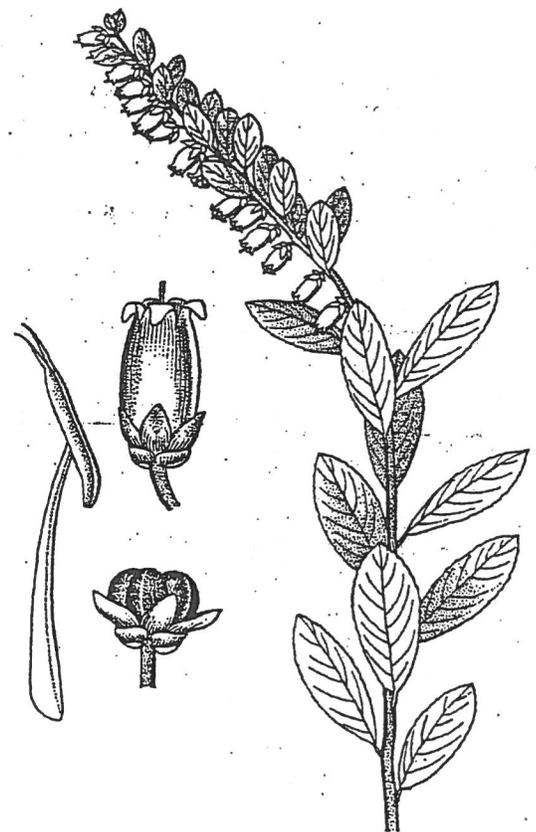
Herbs

<i>Carex trisperma</i>	Three-seeded sedge
------------------------	--------------------

Bryoid

<i>Sphagnum</i> sp./spp.	Peat moss
--------------------------	-----------

*indicates rare plant in Maine



Chamaedaphne calyculata

Reprinted with permission from *The Illustrated Companion to Gleason and Cronquist's Manual: Illustrations of Vascular Plants of Northeastern US and Adjacent Canada*, copyright 1998. The New York Botanical Garden.

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
Scarborough Wildlife Management Area
Rachel Carson National Wildlife Refuge
Saco Heath - The Nature Conservancy

Oxford County
Cumberland County
York County
York County

Synonymy:

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

The information in this fact sheet was downloaded from the Natural Areas Division's Biological and Conservation Database on March 9, 1999. 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 community or would like more information,
please contact the Natural Areas Division
State House Station 93, Augusta, Maine 04333; telephone (207) 287-8044.





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

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 (*Hierochloa odorata*), wild rose (*Rosa* spp.), bayberry (*Myrica pensylvanica*), and other grasses and sedges.

Synonyms:

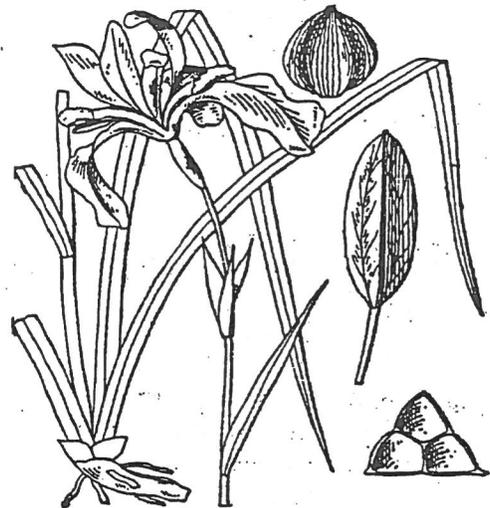


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

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:



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

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

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.

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.

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.





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

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:



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

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 |

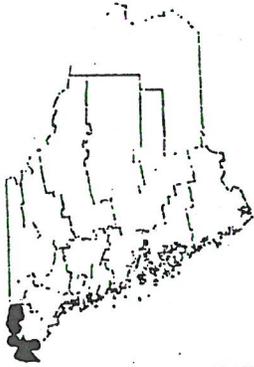
* The current official state status is based on 1988 data.

** Proposed state status based on current (1998) data.

Known Distribution in Maine:

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



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

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.

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.





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

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*.



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

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.

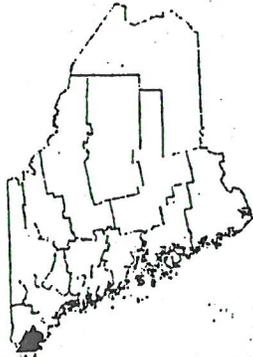
Status of *Liatris scariosa*

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:



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)

▲ Historical (before 1978)

● Recent (1978 - present)

One symbol may represent multiple occurrences or several towns

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.

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.





Calystegia spithamea (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

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.



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

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 aggressive common bindweed (*C. sepium*).

Synonyms: Formerly known as *Convolvulus spithameus*.

Rarity of *Calystegia spithamea*

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 spithamea*

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.

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): Cumberland, Oxford, York.

Dates of documented observations are: 1885, 1985, 1987, 1992, 1996, 1997, 1998

Reason(s) for rarity:

At northern limit of range and habitat naturally rare.

Conservation considerations:

Some known populations have succumbed to conversion of their habitat to residential or commercial use; others are vulnerable.

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.



PITCH PINE - SCRUB OAK BARRENS

General Description:

Pitch pine - scrub oak barrens are partially forested areas found on dry, sandy, nutrient-poor soils of glacial outwash plains or moraines. Pitch pine is the dominant tree species, forming a semi-open canopy. Shrubs are typically quite abundant, and there are two variations of this forest type which are based on differences in this shrub layer. In typical pitch pine-scrub oak barrens, either continuous cover or scattered clumps of scrub oak are present. A lower layer of heath shrubs, such as lowbush blueberry and huckleberry, may be present in patches among scrub oak. In other barrens, called pitch pine-heath barrens, scrub oak is absent; therefore the shrub layer is composed of strictly the lower heath shrubs, giving these barrens a more park-like appearance. Pitch pine-scrub oak barrens support numerous rare butterflies, moths, and other invertebrates.

Characteristic and Rare Species List:

Trees

<i>Pinus rigida</i>	Pitch pine
<i>Pinus strobus</i>	White pine

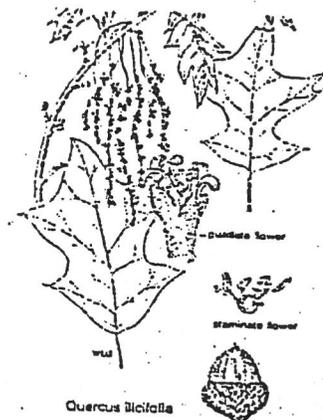
Shrubs

<i>Gaylussacia baccata</i>	Black huckleberry
<i>Kalmia angustifolia</i>	Sheep laurel
<i>Quercus ilicifolia</i>	Scrub oak
<i>Vaccinium angustifolium</i>	Lowbush blueberry

Herbs

<i>Carex lucorum</i>	Woodland sedge
• <i>Diplasiastrum X sabinifolium</i>	Juniper clubmoss
<i>Gaultheria procumbens</i>	Wintergreen
• <i>Hieracium venosum</i>	Veiny hawkweed
• <i>Liatis scariosa</i>	Northern blazing star
<i>Oryzopsis asperifolia</i>	Rough-leaved ricegrass
<i>Pteridium aquilinum</i>	Bracken fern
<i>Schizachyrium scoparium</i>	Little bluestem

• Indicates rare plant in Maine



Reprinted with permission from The Illustrated Companion to Gleason and Cronquist's Manual: Illustrations of Vascular Plants of Northeastern United States and Adjacent Canada, copyright 1998, The New York Botanical Garden.

Diagnostic Characteristics:

Pitch pine-dominated, partially forested areas, which develop on sands or glacial outwash deposits, not on stabilized coastal dunes.

Similar Types:

Pitch-pine dune semiforests are also pitch-pine dominated, but they occur on stabilized sand dunes along the coast. They also lack a well-developed heath shrub layer.

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 our history of fire suppression, 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

Synonymy:

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

The information in this fact sheet was downloaded from the Natural Areas Division's Biological and Conservation Database on Sept. 1, 1998. 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 community or would like more information,
please contact the Natural Areas Division
State House Station 93, Augusta, Maine 04333; telephone (207) 287-8044.





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.

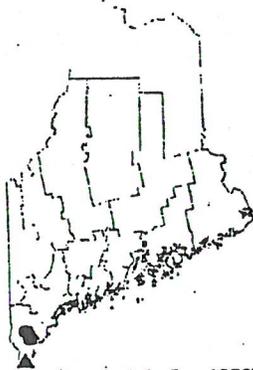
Status of *Sericocarpus asteroides*

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.





Maine Department of Conservation
Natural Areas Division

Rare Plant Fact Sheet
PMLJL020F0

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

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.

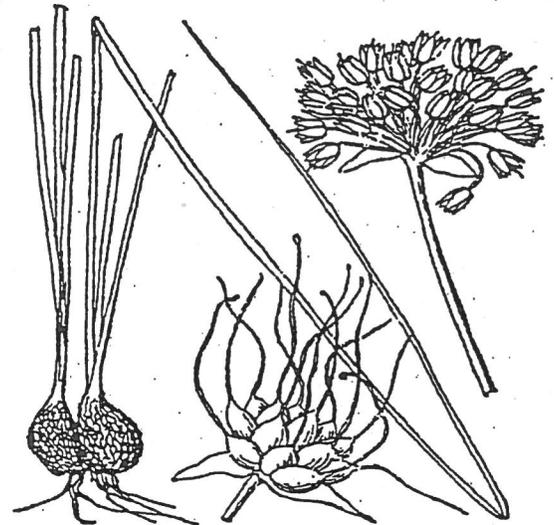


Illustration from Britton & Brown's Illustrated Flora of the Northern United States and Canada, 2nd ed.

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*

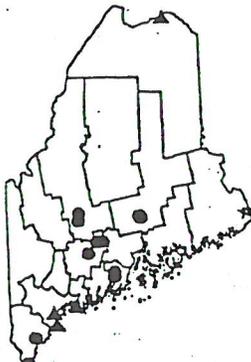
- | | | |
|--------------------------|------|---|
| State Rank: | S2 | Imperiled in Maine because of rarity or vulnerability to further decline. |
| New England Rank: | None | |
| Global Rank: | G5 | Demonstrably widespread, abundant, and secure globally. |

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.



APPENDIX D

Open Space Committee area evaluation worksheet: Value, Threat, Protection, Access, Connectivity

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

Environment:

Branch Brook Corridor
Blueberry Plains near B. Brook
Estuary Area of B. Brook
Kennebunk River Corridor
Gooch's Creek/Lake Brook
Ward Brook/Alewife Pond Corridor
"Punky Swamp"
Mousam River West Corridor
Cold Water Brook
Day Brook
Wonder Brook
Mousam River East Corridor
Mousam River Estuary/Back Creek

Value	Threat	Protection		Connectivity
1	3	1		1
1	3	1		2
1	2	2		2
1	2	2		2
2	1	3		2
1	2	2		2
3	3	2		3
1	2	2		1
2	3	2		2
2	2	2		2
2	2	2		2
1	2	2		2
1	2	2		2
				1

Recreation:

Downtown Kennebunk
Parks & Rec facilities
Trails and Connections
Water Access Points
Lower Village
Parks & Rec facilities
Trails and Connections
Water Access Points
West Kennebunk Village
Parks & Rec facilities
Trails and Connections
Water Access Points
Webber Hill Road/Cold Water Brook Area
Parks & Rec facilities
Trails and Connections
Water Access Points

Value	Threat	Protection	Access	Connectivity
				1
1	3	1	1	
1	3	2	2	
1	1	2	2	
				1
1	3	2	2	
1	1	2	2	
1	1	2	3	
				1
1	3	2	2	
1	2	2	2	
1	2	2	2	
				2
1	3	2	2	
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

Downtown Kennebunk

Historic and Cultural value
 Visual Corridors
 Scenic value
 Neighborhood Spaces
 Agricultural value
 Forest resource value

	<u>Value</u>	<u>Threat</u>	<u>Protection</u>	<u>Access</u>	<u>Connectivity</u>
					2
Historic and Cultural value	1	2	2	1	
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
 Visual Corridors
 Scenic value
 Neighborhood Spaces
 Agricultural value
 Forest resource value

					2
Historic and Cultural value	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
 Visual Corridors
 Scenic value
 Neighborhood Spaces
 Agricultural value
 Forest resource value

					2
Historic and Cultural value	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
 Visual Corridors
 Scenic value
 Neighborhood Spaces
 Agricultural value
 Forest resource value

					2
Historic and Cultural value	2	3	3	2	
Visual 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
 Visual Corridors
 Scenic value
 Neighborhood Spaces
 Agricultural value
 Forest resource value

					3
Historic and Cultural value	1	1	2	2	
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	