

TOWN OF BENTON
2018 Comprehensive Plan
SECTION IV - MAPS
VERSION 9/19/17

Adopted by Town Select Board, _____

Town of Benton Comprehensive Plan

Section IV - Maps

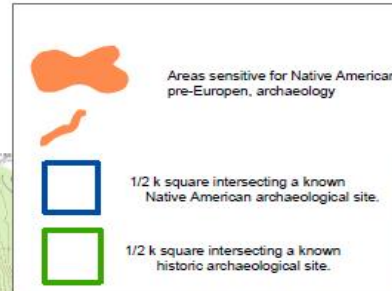
COMPREHENSIVE PLAN – SECTION IV

Section IV, is the source for maps that provide a visual picture of the Town and its infrastructure and sources for images used.

Town of Benton Comprehensive Plan Section IV - Maps

1. HISTORIC AND ARCHAEOLOGICAL RESOURCES MAP(S)

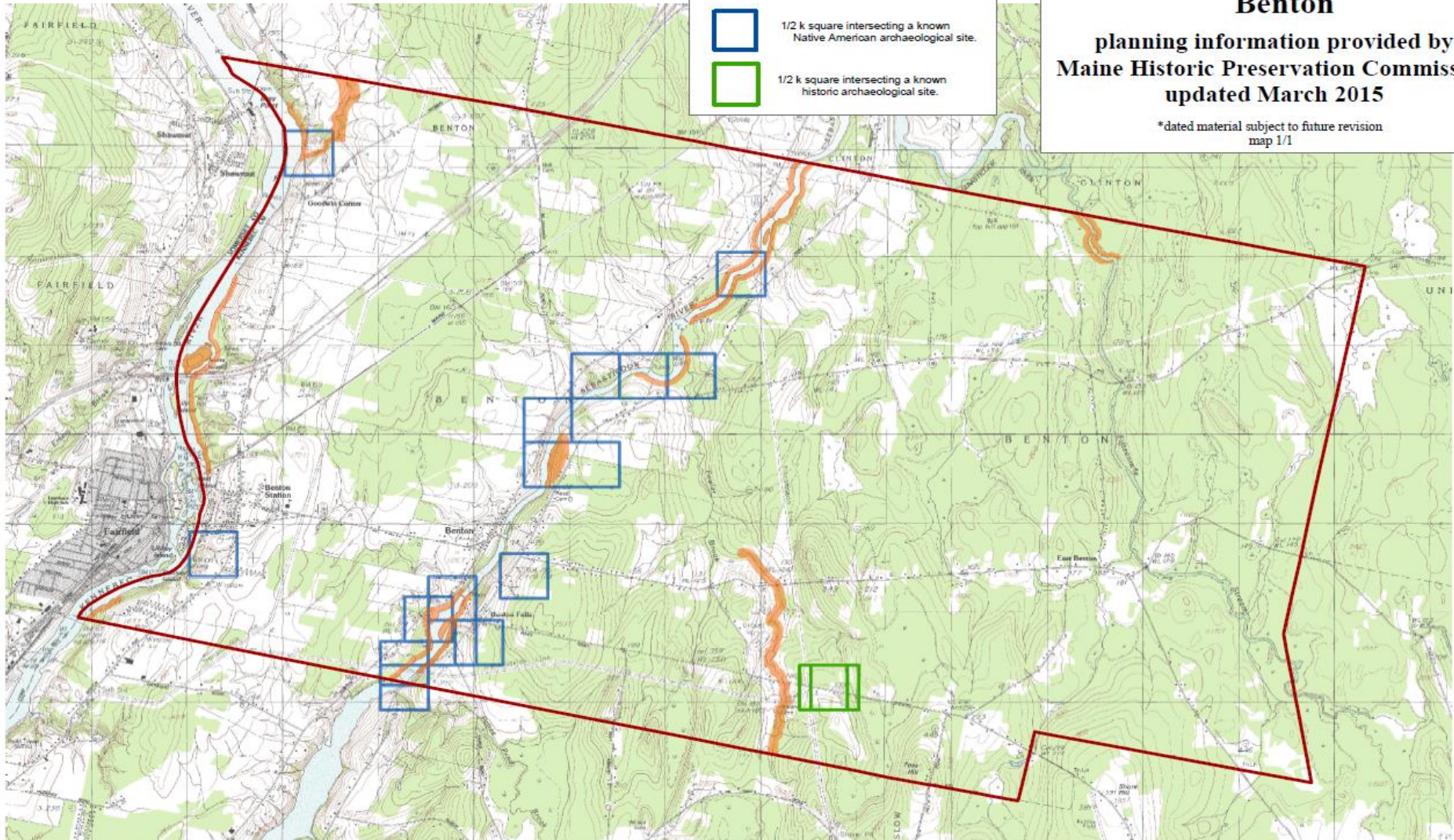
SECTION IV - MAP 1.1



**Known Archaeological Sites* and
Areas Sensitive for
Native American Archaeology* in
Benton**

**planning information provided by
Maine Historic Preservation Commission
updated March 2015**

*dated material subject to future revision
map 1/1



Town of Benton Comprehensive Plan

Section IV - Maps

2. WATER RESOURCE MAP(S)

Wetland Characteristics Map, Benton Section IV - Map 2.1



Town of Benton Comprehensive Plan

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LEGEND

This map depicts all wetlands shown on National Wetland Inventory (NWI) maps, but categorized them based on a subset of wetland functions. This map and its depiction of wetland features neither substitute for nor eliminate the need to perform on-the-ground wetland delineation and functional assessment. In no way shall use of this map diminish or alter the regulatory protection that all wetlands are accorded under applicable State and Federal laws. For more information about wetlands characterization contact Elizabeth Hertz at the Maine Department of Conservation (207-287-8061, elizabeth.hertz@maine.gov).

The Wetlands Characterization model is a planning tool intended to help identify likely wetland functions associated with significant wetland resources and adjacent uplands. Using GIS analysis, this map provides basic information regarding what ecological services various wetlands are likely to provide. These ecological services, each of which has associated economic benefits, include: floodflow control, sediment retention, finfish habitat, and/or shellfish habitat. There are other important wetland functions and values not depicted in this map. Refer to www.maine.gov/dep/water/wetlands/ipwetfv2.html for additional information regarding wetland functions and values. Forested wetlands and small wetlands such as vernal pools are known to be underrepresented in the National Wetlands Inventory (NWI) data used to create this map. The model developed to estimate the functions provided by each wetland could not capture every wetland function or value. Therefore, it is important to use local knowledge and other data sources when evaluating wetlands, and each wetland should be considered relative to the whole landscape/watershed when assessing wetland resources at a local level.



Organized Township Boundary



Unorganized Township



Selected Town or Area of Interest



Developed: Impervious surfaces including buildings and roads



Subwatersheds- The shaded, background polygons are subwatersheds (areas that drain to a particular lake, wetland, pond, river, stream, or the ocean). The subwatersheds are shaded to show topographic relief. This "hillshading" assumes the sun is shining from the northwest, so ridgetops and northwest-facing slopes appear light, whereas valleys and southeast-facing slopes appear dark. Because many areas of Maine are relatively flat, the topographic relief shown here has been exaggerated to make the details easier to see.

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Wetland Functions: Fill Pattern

Some wetlands may have more than one function (fill pattern)



RUNOFF / FLOODFLOW ALTERATION

Wetlands provide natural stormwater control capabilities. As natural basins in the landscape, wetlands are able to receive, detain, and slowly release stormwater runoff. Wetland shelves along stream banks naturally regulate flood waters by providing an area for swollen stream flows to expand and slow, thereby protecting downstream properties. This map assigns Runoff/Floodflow Alteration Functions to wetlands that are (a) contained in a known flood zone, (b) associated with a surfacewater course or waterbody, and (c) with slope < 3%.

AND/OR

EROSION CONTROL / SEDIMENT RETENTION

Wetlands act as natural sponges that can hold water, allowing suspended particles such as sediment to settle out. The dense vegetation in most wetlands helps to stabilize soil and slow water flows, thereby reducing scouring and bank erosion. This map assigns Erosion Control / Sediment Retention functions to wetlands with (a) slope < 3%; (b) emergent vegetation; and (c) close proximity to a river, stream, or lake.



FINFISH HABITAT

Wetlands with documented finfish populations, including wetlands adjacent to a river, stream, or lake.

AND/OR

SHELLFISH HABITAT

Inland wetlands and streams can directly affect the status of coastal shellfish harvest areas. Fecal coliform bacteria and waterborne nutrients resulting from land use changes away from the coast can travel via surface water to harvestable flats. One failed septic system near a stream could close a mudflat several miles away. Excessive nutrients can reduce water clarity and stimulate epiphytic growth that degrades eelgrass meadows. Conservation of freshwater wetlands and stream buffers in coastal watersheds is a key component in marine resource conservation. This map assigns a Shellfish Habitat function to wetlands within 0.5 miles of (a) identified shellfish habitat, (b) identified shellfish closure areas, or (c) mapped eelgrass beds OR palustrine wetlands directly connected by a stream of < 0.5 mile in length to (a) identified shellfish habitat, (b) identified shellfish closure areas, or (c) mapped eelgrass beds.



PLANT/ANIMAL HABITAT

Nearly all wildlife species, and many of Maine's plant species, depend on wetlands during some part of their life cycle. For the purposes of this map, wetlands containing open water or emergent vegetation, 3 or more wetland vegetation classes (see below), and within ¼ mile of a known rare, threatened, or endangered plant or animal occurrence, within ¼ mile of a mapped significant or essential habitat, or within ¼ mile of a rare or exemplary natural community have been assigned this function. Rare element occurrences and mapped habitats can be found on Map 2 High Value Plant & Animal Habitats.



OTHER FUNCTIONS

CULTURAL/EDUCATIONAL. Wetlands within ¼ mile of a boat ramp or school have been assigned this value as these wetlands are likely candidates for use as outdoor classrooms, or similar social benefit. Wetlands rated for other functions listed above may also demonstrate cultural/educational values although not expressly shown.

OR

NO DOCUMENTED FUNCTION. The basis of this characterization is high altitude aerial photos. Photo quality often limits the information that can be interpreted from small wetland features, or those with dense canopy cover. Although not assigned a function under this study, ground surveys may reveal that these wetlands have multiple functions and values.

Wetland Class: Fill Color



Aquatic Bed (floating or submerged aquatic vegetation), Open Water



Emergent (herbaceous vegetation), Emergent/Forested Mix (woody vegetation >20 ft tall), Emergent/Shrub-Scrub Mix (woody vegetation <20 ft tall)



Forested, Forested/Shrub-scrub



Shrub-scrub



Other (rocky shore, streambed, unconsolidated shore, reef, rocky bottom)

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National Wetlands Inventory (NWI) maps (the basis of wetlands shown on this map) are interpreted from high altitude photographs. NWI Wetlands are identified by vegetation, hydrology, and geography in accordance with "Classification of Wetlands and Deepwater Habitats" (FWS/OBS-79/31, Dec 1979). The aerial photographs document conditions for the year they were taken. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, State, or local government. NWI maps depict general wetland locations, boundaries, and characteristics. They are not a substitute for on-ground, site-specific wetland delineation.

Data Sources

DATA SOURCE INFORMATION

(note: italicized file names can be downloaded from Maine Office of GIS)

TOWNSHIP BOUNDARIES

Maine Office of GIS (2006); *metwp24*

ROADS

Maine Office of GIS, Maine Department of Transportation (2005); *medotpub*

HYDROLOGY

Maine Office of GIS, U.S. Geological Survey (2004); *hyd24*

DEVELOPED

Maine Office of GIS, Maine Department of Environmental Protection (contact agency for this multiple agency collaboration) (2005); *imperv*

NATIONAL WETLANDS INVENTORY (NWI)

Maine Office of GIS (1998); *nwi*

DRAINAGE DIVIDES

Maine Office of GIS (1994); *medrdvd*

DATA SOURCE CONTACT INFORMATION

Maine Office of GIS: <http://www.maine.gov/megis/>

Maine Department of Transportation- <http://www.maine.gov/mdot/>

Maine Department of Conservation:

<http://www.maine.gov/doc/commissioner/landuse/index.shtml>

Maine Geological Survey- <http://www.maine.gov/doc/nrimc/mgs/mgs.htm>

DIGITAL DATA REQUEST

To request digital data for a town or organization, visit our website.

http://www.beginningwithhabitat.org/the_maps/gis_data_request.html

3. NATURAL RESOURCE MAP(S)

Town of Benton Comprehensive Plan

Section IV - Maps

LEGEND

The data presented here represents a compilation of core Beginning with Habitat map products. Comprehensive field surveys do not exist for all areas in Maine, so some important habitats may not be mapped. Habitat features on this map are based on limited field surveys, aerial photo interpretation, and computer modeling. Habitat data is updated regularly. Map users should consult with the Beginning with Habitat program to verify that data illustrated on this map is still current prior to utilizing it for planning decisions.

This regional map provides a landscape view of water resources, high value plant and animal habitats, and undeveloped habitat blocks. For more detailed information, please consult the 1:24,000 (town level) Beginning with Habitat "Water Resources and Riparian Habitats", "High Value Plant and Animal Habitats" and "Undeveloped Habitat Blocks" maps. Availability of town level maps can be found at:
www.beginningwithhabitat.org/the_maps/map_availability.html



Organized Township Boundary



Unorganized Township



Selected Town or Area of Interest



Developed Area of impervious surfaces including buildings and roads

MAP 1: Water Resources and Riparian Habitats



Riparian Buffer

Ponds \geq 10 acres (Great Ponds), rivers, coastal waters, and wetlands \geq 10 acres in size are surrounded by a 250 foot riparian buffer zone. Streams are surrounded by a 75 foot riparian buffer zone.



NWI Wetlands \geq 10 Acres

The National Wetlands Inventory (NWI) uses aerial photographs from the mid-1980s to identify wetlands based on visible signs of wetland vegetation, hydrology, and geography. The NWI maps are not based on field wetland delineations and given the limits of aerial photo interpretation, do not depict all wetlands that occur. Ground verification should be used to determine actual wetland boundaries and NWI maps should be considered as only a planning tool to determine potential wetland locations.

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MAP 2: High Value Plant and Animal Habitats

Essential Wildlife Habitats (MDIFW)

Maine's Department of Inland Fisheries & Wildlife (MDIFW, www.maine.gov/ifw) maps areas currently or historically providing habitat essential to the conservation of endangered or threatened species including roseate terns, piping plovers, and least terns as directed by the Maine Endangered Species Act. These regulated areas may require special management. Identification of Essential Habitat areas is based on species observations (occupancy). For more information about Essential Wildlife Habitats, go to www.maine.gov/ifw/wildlife/species/endangered_species/essential_habitat/introduction.htm. These habitat layers also may be downloaded from the Maine Office of GIS Data Catalog at <http://apollo.ogis.state.me.us/catalog>.

Significant Wildlife Habitats (MDIFW)

Maine's Natural Resources Protection Act (NRPA, 1988) was intended to slow further degradation and loss of Maine's natural resources. This act regulates activities within and adjacent to wetlands, streams, and other natural resources, but also regulates activities that could threaten the state's Significant Wildlife Habitats. Mapped Significant Wildlife Habitats include tidal and inland waterfowl/wading bird habitat, deer wintering areas, seabird nesting islands, shorebird areas, and significant vernal pools. For more information about NRPA, go to: www.maine.gov/dep/blwq/docstand/nrpapage.htm.



Natural Heritage Network Occurrences (Plants/Animals/Communities)

Plants- Observations of plants cataloged by the Maine Natural Areas Program (MNAP) that are rare in Maine. Locations have been field-verified within the last 20 years.

Animals- Observations of wildlife species that are endangered, threatened, or rare in Maine. Mapped by the Maine Department of Inland Fisheries and Wildlife.

Communities- The MNAP has classified and distinguished 98 different natural community types that collectively cover the state's landscape. These include such habitats as floodplain forests, coastal bogs, alpine summits, and many others. Each type is assigned a rarity rank of 1 (rare) through 5 (common). Mapped rare natural communities or ecosystems, or exemplary examples of common natural communities or ecosystems, are based on field surveys and aerial photo interpretation. Consult with an MNAP ecologist to determine conservation needs of particular communities or ecosystems.

High Value Habitat for Priority Trust Species (USFWS)

This data layer portrays the highest value habitat from the Gulf of Maine Watershed Habitat Analysis, a habitat suitability model developed by the U.S. Fish & Wildlife Service (USFWS) Gulf of Maine Coastal Program. The analysis evaluated existing field data and scientific literature for 91 species of fish, wildlife, and plants important to USFWS in the Gulf of Maine watershed and ranked the landscape based on potential habitat for each species. This theme shows only the most important habitat (top 25%) for all species combined and excludes areas less than 5 acres. For more information please see the 1:24,000 Map 2 "High Value Plant and Animal Habitats" and Map 8 "Valuable Habitats for USFWS Priority Trust Species." For more information about the Gulf of Maine Watershed Habitat Analysis please visit: <http://www.fws.gov/northeast/gulfofmaine>.

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MAP 3: Undeveloped Habitat Blocks

Undeveloped Habitat Blocks (MDIFW)

Undeveloped habitat blocks are areas with relatively little development and that provide opportunity for meaningful habitat conservation. These areas remain mostly unfragmented and are likely to include habitat conditions of a quality that could be expected to support most terrestrial species known to occur in the given region. Undeveloped habitat blocks have been depicted on this map by removing areas within 250-500 feet, based on intensity, of all improved roads identified by the Maine Department of Transportation and all developed areas identified in the 2006 MELCD Land Use/Land Cover and 2005 Impervious Surface data.

Development Buffer (MDIFW) (note: transparent layer)

Areas defined by a 250-500 foot, intensity based zone of influence around all improved roads identified by the Maine Department of Transportation and all developed areas identified in the 2006 MELCD Land Use/Land Cover and 2005 Impervious Surface data.

Focus Areas

Focus Areas of Statewide Ecological Significance (note: not present in all regions)

Focus Areas of Statewide Ecological Significance have been designated based on an unusually rich convergence of rare plant and animal occurrences, high value habitat, and relatively intact natural landscapes (the combined elements of Beginning with Habitat Maps 1-3). Focus area boundaries were drawn by MNAP and MDIFW biologists, generally following drainage divides and/or major fragmenting features such as roads. Focus Areas are intended to draw attention to these truly special places in hopes of building awareness and garnering support for land conservation by landowners, municipalities, and local land trusts. For descriptions of specific Focus Areas, consult the Beginning with Habitat notebook or the following website:
<http://www.maine.gov/doc/nrimc/mnap/focusarea/index.htm>

Data and Information Sources

DATA SOURCE INFORMATION

TOWNSHIP BOUNDARIES

Maine Office of GIS; *metwp24*

ROADS

Maine Office of GIS, Maine Department of Transportation; *medotpub*, *E911rds*, *railroutesys*,

HYDROLOGY

U.S. Geological Survey; *NHDH Maine*

DEVELOPED

Maine Office of GIS, Maine Department of Environmental Protection; *imperv*

FOCUS AREA BOUNDARIES

Maine Natural Areas Program

NATIONAL WETLANDS INVENTORY

U.S. Fish & Wildlife Service; *NWI*

RIPARIAN BUFFERS

Maine Natural Areas Program

HIGH VALUE PLANT & ANIMAL HABITATS

Maine Office of GIS, Maine Dept. of Inland Fisheries & Wildlife, Maine Natural Areas Program, U.S. Fish & Wildlife Service; *ehpvrtm*, *ehrtern*, *shorebird*, *iwwh*, *shorezone_iwwh*, *sni*, *forest91*, *fresh91*, *grass91*, *saline91*, *gomlc7*, *dwa*, *svpbuffers*

PLANTS, ANIMALS, AND NATURAL COMMUNITIES

Maine Department of Inland Fisheries & Wildlife, Maine Natural Areas Program

UNDEVELOPED HABITAT BLOCKS, DEVELOPMENT BUFFER

Maine Department of Inland Fisheries & Wildlife

DATA SOURCE CONTACT INFORMATION

Maine Office of GIS: <http://www.maine.gov/megis/>

Maine Natural Areas Program: <http://www.maine.gov/doc/nrimc/mnap>

Maine Department of Inland Fisheries & Wildlife: <http://www.maine.gov/ifw/>

U.S. Fish & Wildlife Service: Gulf of Maine Coastal Program- <http://www.fws.gov/GOMCP/>

Maine Department of Transportation: <http://www.maine.gov/mdot/>

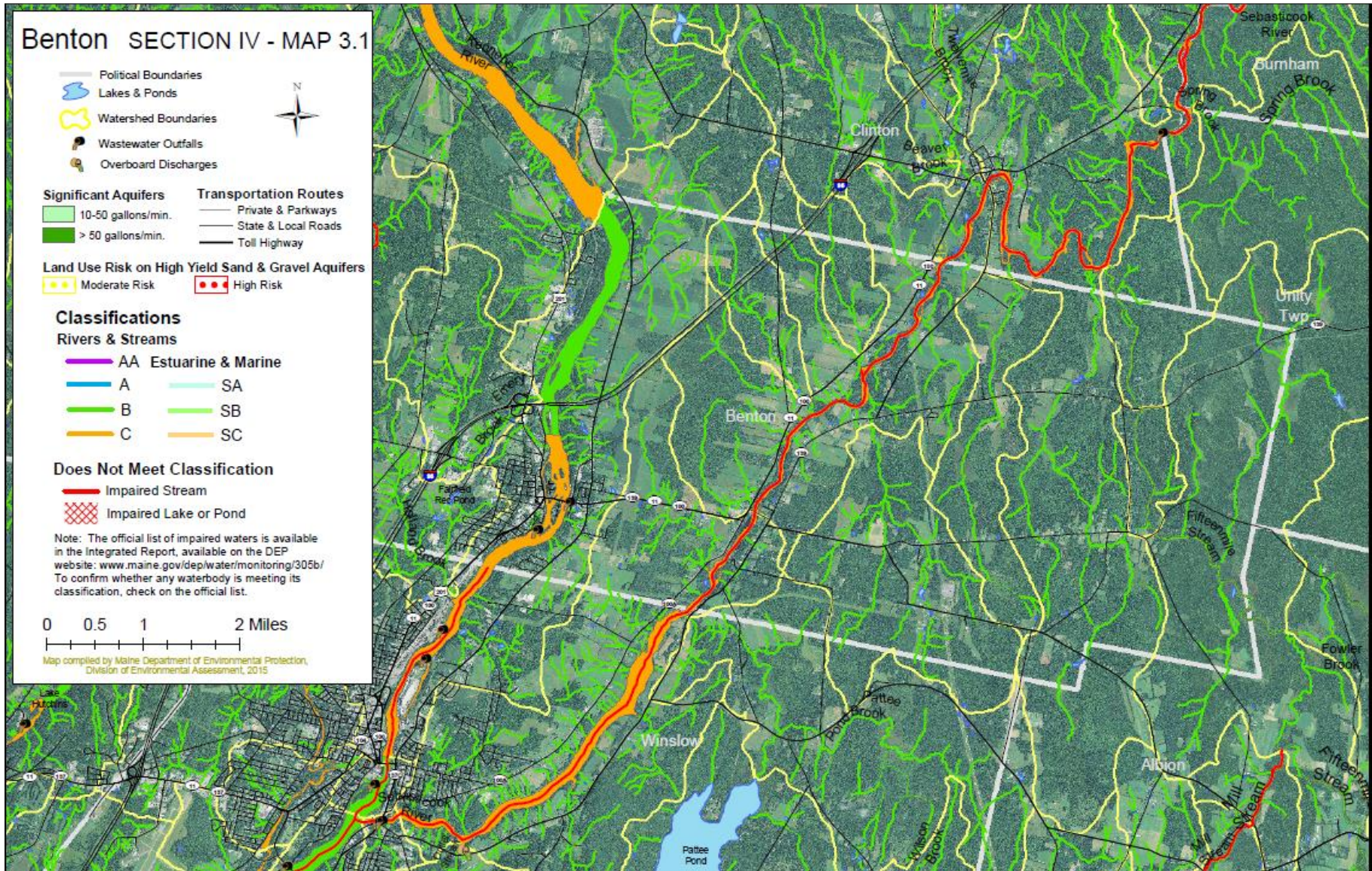
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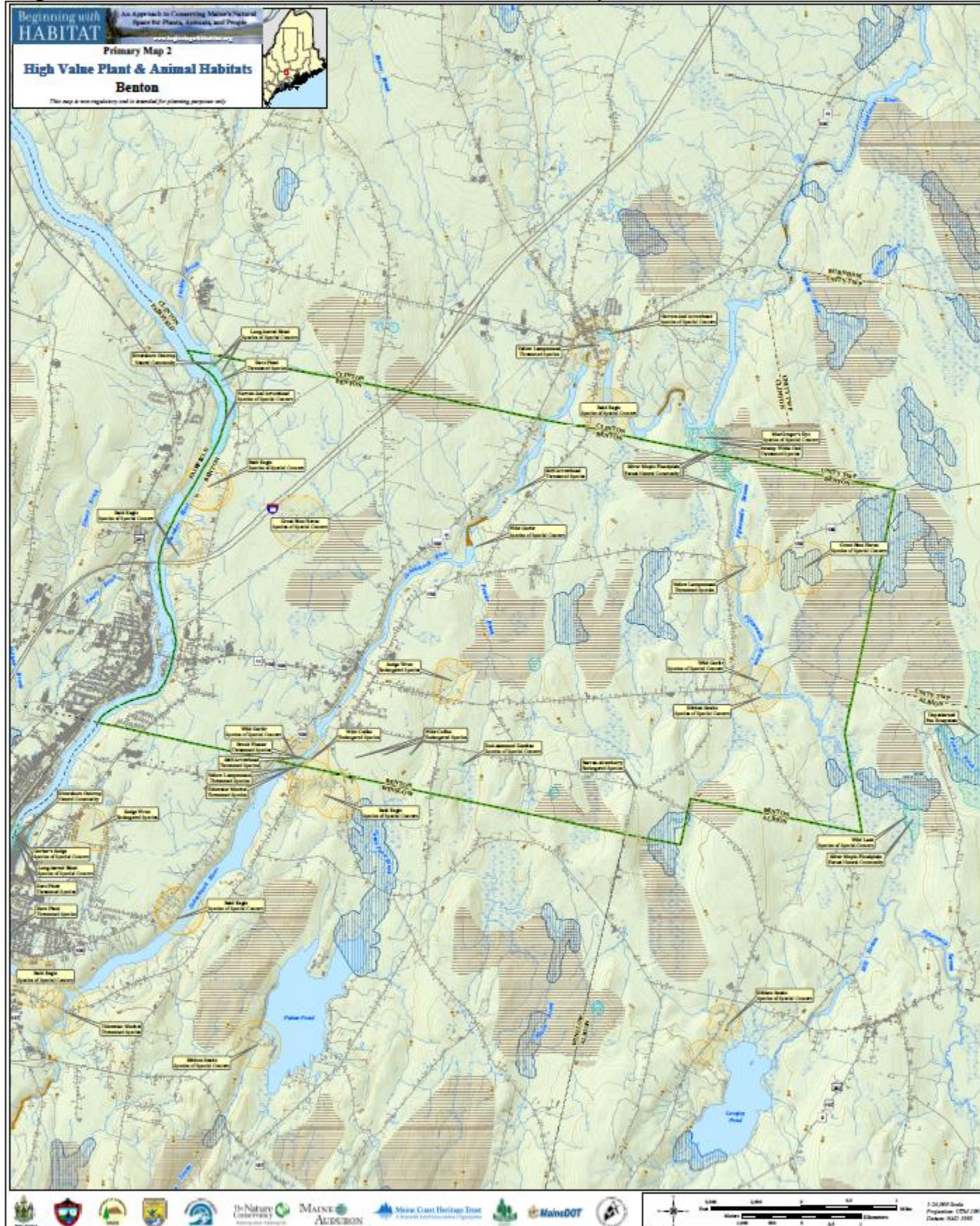
Town of Benton Comprehensive Plan

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High Value Plant & Animal Habitats, Benton Section IV Map 3.2



Town of Benton Comprehensive Plan

Section IV - Maps

LEGEND

Beginning with Habitat (BwH) is a voluntary tool intended to assist landowners, resource managers, planners, and municipalities in identifying and making informed decisions about areas of potential natural resource concern. This data includes the best available information provided through BwH's coalition partners as of the map date, and is intended for information purposes only. It should not be interpreted as a comprehensive analysis of plant and animal occurrences or other local resources, but rather as an initial screen to flag areas where agency consultation may be appropriate. Habitat data sets are updated continuously as more accurate and current data becomes available. However, as many areas have not been completely surveyed, features may be present that are not yet mapped, and the boundaries of some depicted features may need to be revised. Local knowledge is critical in providing accurate data. If errors are noted in the current depiction of resources, please contact our office. Some habitat features depicted on this map are regulated by the State of Maine through the Maine Endangered Species Act (Essential Habitats and threatened and endangered species occurrences) and Natural Resources Protection Act (Significant Wildlife Habitat). We recommend consultation with MDIFW Regional Biologists or MNAP Ecologists if activities are proposed within resource areas depicted on this map. Consultation early in the planning process usually helps to resolve regulatory concerns and minimize agency review time. For MDIFW and MNAP contact information, visit <http://www.beginningwithhabitat.org/contacts/index.html>.



Organized Township Boundary



Unorganized Township



Selected Town or Area of Interest



Developed: Impervious surfaces such as buildings and roads

Rare, Threatened, or Endangered Wildlife



Known rare, threatened, or endangered species occurrence and/or the associated habitats based on species sightings.

Consult with an MDIFW regional biologist to determine the relative importance and conservation needs of the specific location and supporting habitat. For more information regarding individual species visit our website, http://www.maine.gov/rfw/wildlife/species/endangered_species/state_list.htm, for species specific fact sheets.

The Federal Endangered Species Act requires actions authorized, funded, or carried out by federal agencies be reviewed by the U. S. Fish and Wildlife Service. If your project occurs near an occurrence of the Atlantic Salmon, Roseate Tern, Piping Plover, Canada Lynx, New England Cottontail, Fubish's Lousewort, or Small-whorled Pagonia contact the Maine Field Office, USFWS, 1168 Main St., Old Town, ME 04468.

Rare or Exemplary Plants and Natural Communities



Rare Plant Locations

Known rare, threatened, or endangered plant occurrences are based on field observations. Consult with a Maine Natural Areas Program (MNAP) Ecologist to determine conservation needs of particular species. For more information regarding rare plants, the complete list of tracked species and fact sheets for those species can be found at: <http://www.maine.gov/doc/nrimc/mnap/features/plantlist.htm>



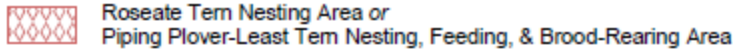
Rare or Exemplary Natural Community Locations

The MNAP has classified and distinguished 98 different natural community types that collectively cover the state's landscape. These include such habitats as floodplain forests, coastal bogs, alpine summits, and many others. Each type is assigned a rarity rank of 1 (rare) through 5 (common). Mapped rare natural communities or ecosystems, or exemplary examples of common natural communities or ecosystems, are based on field surveys and aerial photo interpretation. Consult with an MNAP Ecologist to determine conservation needs of particular communities or ecosystems.

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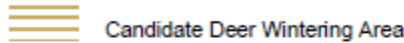
Section IV - Maps

Essential Wildlife Habitats

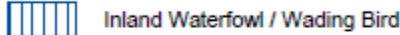


Maine's Department of Inland Fisheries & Wildlife (MDIFW, www.state.me.us/ifw) maps areas currently or historically providing habitat essential to the conservation of endangered or threatened species as directed by the Maine Endangered Species Act (12 MRSA, Chapter 925, Subchapter 3, Sections 12804 and 12806) and regulations (MDIFW Rules, Chapter 8.05). Identification of Essential Habitat areas is based on species observations and confirmed habitat use. If a project occurs partly or wholly within an Essential Habitat, it must be evaluated by MDIFW before state and/or municipal permits can be approved or project activities can take place.

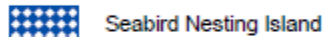
Significant Wildlife Habitats



Forested area possibly used by deer for shelter during periods of deep snow and cold temperatures. Assessing the current value of a deer wintering area requires on-site investigation and verification by IF&W staff. Locations depicted should be considered as approximate only.



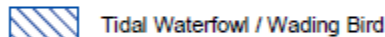
Freshwater breeding, migration/staging, and wintering habitats for inland waterfowl or breeding, feeding, loafing, migration, or roosting habitats for inland wading birds.



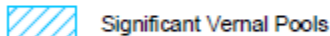
An island, ledge, or portion thereof in tidal waters with documented, nesting seabirds or suitable nesting habitat for endangered seabirds.



Coastal staging areas that provide feeding habitat like tidal mud flats or roosting habitat like gravel bars or sand spits for migrating shorebirds



Breeding, migrating/staging, or wintering areas for coastal waterfowl or breeding, feeding, loafing, migrating, or roosting areas for coastal wading birds. Tidal Waterfowl/Wading Bird habitats include aquatic beds, eelgrass, emergent wetlands, mudflats, seaweed communities, and reefs.

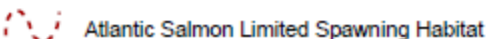
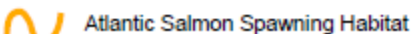
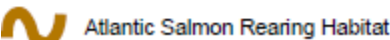


A pool depression used for breeding by amphibians and other indicator species and that portion of the critical terrestrial habitat within 250 ft of the spring or fall high water mark. A vernal pool must have the following characteristics: natural origin, nonpermanent hydroperiod, lack permanently flowing inlet or outlet, and lack predatory fish.

Maine's Natural Resources Protection Act

Maine's Natural Resources Protection Act (NRPA, 1988) is administered by the Maine Department of Environmental Protection (MDEP; <http://www.maine.gov/dep/blwq/docstand/nrpapage.htm>) and is intended to prevent further degradation and loss of natural resources in the state, including the above Significant Wildlife Habitats that have been mapped by MDIFW. MDEP has regulatory authority over most Significant Wildlife Habitat types. The regional MDEP office should be consulted when considering a project in these areas.

Atlantic Salmon Spawning/Rearing Habitat



Mapped by Atlantic Salmon Commission (ASC) and US Fish & Wildlife Service (USFWS) from field surveys on selected Penobscot and Kennebec River tributaries and the Dennys, Ducktrap, East Machias, Machias, Pleasant, Narraguagus, and Sheepscot Rivers.

Town of Benton Comprehensive Plan

Section IV - Maps

Data Sources

DATA SOURCE INFORMATION

TOWNSHIP BOUNDARIES

Maine Office of GIS: *Metwp24* (2013)

ROADS

Maine Office of GIS, Maine Department of Transportation: *Medotpub* (2013)

HYDROLOGY

U.S. Geological Survey National Hydrography Dataset (NHD) Maine (2012)

DEVELOPED

Maine Office of GIS, Maine Department of Inland Fisheries and Wildlife, and multiple other agencies:
Imperv (2011)

ESSENTIAL & SIGNIFICANT WILDLIFE HABITATS

Maine Office of GIS, Maine Department of Inland Fisheries & Wildlife: *DWA, ETSC, Ehplvtm, Ehrtem, IWWH, Sni, Shorebird, TWWH* (2003-2013)

RARE NATURAL COMMUNITIES & PLANTS

Maine Natural Areas Program: *MNAP_eos* (2013)

ATLANTIC SALMON HABITAT

Maine Office of GIS, Maine Atlantic Salmon Commission, U.S. Fish & Wildlife Service: *Ashab3* (2013)

DATA SOURCE CONTACT INFORMATION

Maine Office of GIS: <http://www.maine.gov/megis/catalog/>

Maine Natural Areas Program: <http://www.maine.gov/doc/nrimc/mnap/>

Maine Department of Inland Fisheries & Wildlife: <http://www.maine.gov/ifw/>

U.S. Fish & Wildlife Service, Gulf of Maine Program: <http://gulfofmaine.fws.gov>

Maine Atlantic Salmon Commission: <http://www.maine.gov/asc/>

Maine Department of Transportation: <http://www.maine.gov/mdot/>

DIGITAL DATA REQUEST

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http://www.beginningwithhabitat.org/the_maps/gis_data_request.html

Town of Benton Comprehensive Plan Section IV - Maps

Benton Section IV Map 3.3






Town of Benton Comprehensive Plan

Section IV - Maps

LEGEND

This map highlights undeveloped natural areas likely to provide core habitat blocks and habitat connections that facilitate species movements between blocks. Undeveloped habitat blocks provide relatively undisturbed habitat conditions required by many of Maine's species. Habitat connections provide necessary opportunities for wildlife to travel between preferred habitat types in search for food, water, and mates. Roads and development fragment habitat blocks and can be barriers to moving wildlife. By maintaining a network of interconnected blocks towns and land trusts can protect a wide variety of Maine's species—both rare and common—to help ensure rich species diversity long into the future. Maintaining a network of these large rural open spaces also protects future opportunities for forestry, agriculture, and outdoor recreation.

-  Organized Township Boundary
-  Unorganized Township
-  Selected Town or Area of Interest

Habitat Blocks



Development Buffer (*pale transparency*)

250-500 foot buffer around improved roads and developed areas based on development intensity.

Undeveloped Habitat Block

Remaining land outside of Development Buffers. Blocks greater than 100 acres are labeled with their estimated acreage.

Approximate Road Crossing Habitat Connections

Represented habitat connections identified through computer modeling highlight locations where quality habitat is likely to occur on both sides of a given road between undeveloped habitat blocks greater than 100 acres and between higher value wetlands. These representations are approximate and have not been field verified.

Undeveloped Block Connectors

Likely road crossing areas linking undeveloped habitat blocks greater than 100 acres. The threat of habitat fragmentation and animal mortality corresponds to traffic volume.



Yellow lines represent habitat road crossings with daily traffic volumes less than 2000 vehicles per day.



Red lines represent habitat road crossings with daily traffic volumes greater than 2000 vehicles per day.

Riparian Connectors

Likely crossing locations for wetland dependent species moving between waterways and wetlands divided by roads



Blue lines represent riparian road crossings with daily traffic volumes less than 2000 vehicles per day.



Purple lines represent riparian road crossings with daily traffic volumes greater than 2000 vehicles per day.



Highway Bridge Connectors

Highway bridges along I-95 and I-295 that span riparian habitat connecting adjacent but separated habitat blocks. These are locations where species are likely to take advantage of infrastructure to move between habitat blocks.


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Section IV - Maps

Conserved Lands

The State of Maine's conserved lands database includes lands in federal, state, and non-profit ownership. It does not include many privately owned conservation lands, especially those protected by local land trusts, or town owned conservation lands. For the most accurate and current information about land ownership, consult with the local assessor and/or other local land management agencies. If public access potential to any of the properties displayed here is uncertain, landowners should be contacted to determine if permission is necessary.


Ownership Type (*transparent layers*)

 **Federal**


National parks, forests, and wildlife refuges. (Includes Canadian conserved lands.)

 **State**


Wildlife Management Areas and other properties managed by the Department of Inland Fisheries and Wildlife, state parks, and parcels managed by the Bureau of Parks & Lands.

 **Municipal**

Town parks, athletic fields, community forests, etc.

 **Private Conservation**

Properties owned and managed by private (usually non-profit) organizations such as The Nature Conservancy, Maine Coast Heritage Trust; Trust for Public Land, and local land trusts.

 **Easement**

Voluntary legal agreements that allow landowners to realize economic benefit by permanently restricting the amount and type of future development and other uses on all or part of their property as they continue to own and use it.

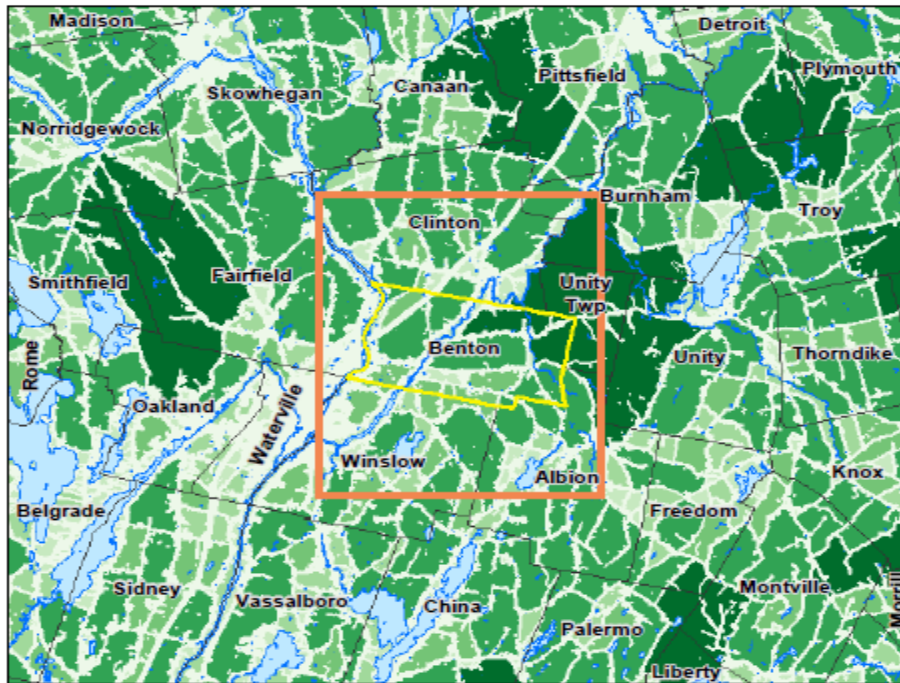
Aerial Imagery

Aerial imagery is often the best tool available to visualize existing patterns of development and resulting changes in the natural landscape. By depicting undeveloped habitat blocks, habitat connectors and conserved lands with aerial photos, the map user can more easily identify opportunities to expand the size and ecological effectiveness of local conservation efforts.

Town of Benton Comprehensive Plan

Section IV - Maps

Regional Undeveloped Blocks



1 : 325,000

1 inch equals 5 miles

Data Sources

DATA SOURCE INFORMATION

TOWNSHIP BOUNDARIES

Maine Office of GIS: *metwp24* (2013)

ROADS

Maine Office of GIS, Maine Department of Transportation): *medotpub* (2013)

HYDROLOGY

U.S. Geological Survey: *NHD_Maine* (2012)

UNDEVELOPED HABITAT BLOCKS, DEVELOPMENT BUFFER, CONNECTORS

Maine Department of Inland Fisheries and Wildlife

CONSERVATION LANDS

Bureau of Parks and Land, Land Use Regulatory Commission, Department of Inland Fisheries and Wildlife: *conserved_land* (2014)

AERIAL IMAGERY

U.S. Department of Agriculture: *NAIP 2013* - state-wide 1-meter color orthoimagery

DATA SOURCE CONTACT INFORMATION

Maine Office of GIS - <http://www.maine.gov/megis/catalog/>

Maine Natural Areas Program - <http://www.maine.gov/doc/nrimc/mnap/>

Maine Dept. of Inland Fisheries & Wildlife - <http://www.maine.gov/ifw/>

Maine Department of Transportation - <http://www.maine.gov/mdot/>

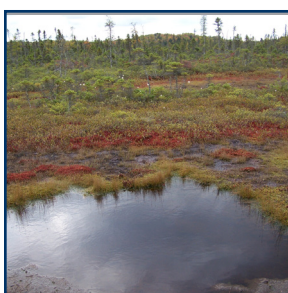
Maine Department of Environmental Protection - <http://www.maine.gov/dep/>

DIGITAL DATA REQUEST

To request digital data for a town or organization, visit our website.

http://www.beginningwithhabitat.org/the_maps/gis_data_request.html

Unity Wetlands



WHY IS THIS AREA SIGNIFICANT?

This large expanse of wetlands and uplands includes a diverse array of natural features, especially of wetland and riparian-associated species and habitats. Several rare plant and animal species, including some of the State's best habitat for rare mussels, have been documented here. In addition, the rivers and tributaries provide spawning and rearing habitat for Atlantic salmon, an Endangered species. Furthermore, the area provides one of the largest remaining unfragmented blocks of land in central Maine, offering a promising opportunity not only for conservation of the area's rarest ecological gems, but also for maintaining wide-ranging common species, from black bear to bobcat, that are becoming increasingly uncommon in more developed landscapes to the south.

OPPORTUNITIES FOR CONSERVATION

- » Educate recreational users about the ecological and economic benefits provided by the Focus Area.
- » Encourage best management practices for forestry, and soil and vegetation disturbance activities near sensitive features.
- » Maintain intact forested buffers along water bodies, wetlands, and important wildlife habitats.
- » Monitor and remove invasive plant populations.
- » Work with willing landowners to permanently protect undeveloped areas and significant features.

For more conservation opportunities, visit the Beginning with Habitat Online Toolbox: www.beginningwithhabitat.org/toolbox/about_toolbox.html.

Rare Animals

Bald Eagle
Creepers
Wood Turtle
Ribbon Snake
Sedge Wren
Tidewater Mucket
Yellow Lampmussel
Coral Hairstreak
Great Blue Heron
Atlantic Salmon

Rare Plants

Stiff Arrow-head
Water Stargrass
Wild Garlic
Wild Leek
MacGregors Rye

Rare and Exemplary Natural Communities

Raised Level Bog Ecosystem
Silver Maple Floodplain Forest
Unpatterned Fen Ecosystem

Significant Wildlife Habitats

Deer Wintering Area
Inland Waterfowl and Wading Bird Habitat

Public Access Opportunities

- Sebasticook Regional Land Trust

Photo credits, top to bottom: Maine Natural Areas Program, Sebasticook Regional Land Trust, Ethan Nedeau, Rick Lawrence, Maine Department of Inland Fisheries and Wildlife



Kanokolus Bog, Andy Reed

FOCUS AREA OVERVIEW

This large expanse of wetlands and uplands is centered on Unity Twp., extending east to Unity Pond and west to the Sebasticook River. It includes a diverse array of natural features, especially of wetland and riparian-associated species and habitats and provides expanses of largely intact forest habitat for wide ranging species associated with unfragmented habitat.

The Sebasticook River from the Kennebec River upstream several miles is among the best habitats in the state for at least two rare mussels, the yellow lampmussel and the tidewater mucket. These species, and other freshwater mussels, have been documented in the Focus Area in several locations along the Sebasticook and some of its tributaries (e.g. Twenty-five Mile Stream, Fifteen Mile Stream, Sandy Stream and the outlet of Unity Pond). The rivers and streams here also provide habitat for Atlantic salmon with over 35 kilometers of spawning and rearing habitat identified in the Sebasticook River and its tributaries. The tributaries, wetlands and riparian forests also provide habitat to several other rare species including the ribbon snake, wood turtle, and numerous floodplain plants.

Twenty-five Mile Stream and Fifteen Mile Stream have high-quality stretches of silver maple floodplain forest, a community

type that is rare statewide. Of particular note is the occurrence in the floodplains of bur oak (*Quercus macrocarpa*), an unusual species in Maine whose distribution is centered in this portion of the state. These floodplain forests are among only a very few in the state with bur oak as an important component, which again heightens their conservation priority. Also found in these forests are several unusual wildflowers, including large populations of spring ephemerals such as trout lilies and bloodroot, as well as wild garlic, rare statewide.

Several peatlands have formed in shallow basins over the past several thousand years. Fowler Bog is a 700+ -acre peatland that has formed in a stream valley, where most of the vegetation is still in contact with surface waters (fen, as opposed to bog). Red maple wooded fen vegetation covers much of the area, with some portions more coniferous. Shrubby fens and wet meadows occur along streamsides. Together these communities make up a good example of an unpatterned fen ecosystem.

Nearby, Kanokolus Bog is a raised level bog ecosystem, where peatland vegetation has become raised above the surface water level. This 300-acre bog is more nutrient-poor than Fowler

Bog, with expanses of open sheep laurel dwarf shrub bog bordered by stunted black spruce and larch. Raised bogs are not uncommon in Maine, but are scarce in central and southern regions, and Kanokolus Bog is considered a good example of this type.

In addition, the wetlands in the Focus Area provide over 3,000 acres of high quality Inland Waterfowl and Wading Bird Habitat. These areas provide undisturbed nesting and feeding habitat and are essential for maintaining viable waterfowl and wading bird populations, regionally. Large Deer Wintering Areas are also present here. Deer congregate in wintering areas which provide reduced snow depths, ample food and protection from wind. Finally, several high value Significant Vernal Pools, small seasonal forested wetlands, are distributed throughout the focus area providing habitat to specialized amphibians and invertebrates that only breed in fishless, ephemeral wetlands.

The Sebasticook Regional Land Trust formerly known as the Friends of Unity Wetlands has been active in conserving land in the Unity Wetlands Focus Area.

RARE AND EXEMPLARY NATURAL COMMUNITIES

Silver Maple Floodplain: This community type includes forest dominated by silver maple (>60% cover). Associates include red maple and American elm (up to 30% cover) or, in a few locations, bur oak (up to 25% cover). Widely spaced trees, many with multiple trunks, give a park like feeling. The understory is open and shrubs are sparse. Musclewood may be present and is a good indicator. The lush carpet of herbs changes from spring ephemerals such as trout lilies and bloodroot to dense fern cover in summer. Bryoid cover (mosses, liverworts, and lichens) is minor. Some forests have a berm adjacent to the river channel, and herbaceous species composition here is different from the lower elevation interior of the floodplain.

Although a number of sites have been cleared or pastured in the past, current shoreland regulations help provide protection to a number of these sites. Exotic plant species such as Japanese knotweed, which may displace those native to our area, represent a threat to the integrity of these forests and have degraded some Maine examples.

Some of the characteristic animal species of this community type include northern waterthrush, barred owl, belted kingfisher, bank swallow, and green heron. Both the yellow-throated vireo and blue-gray gnatcatcher, rare birds for central Maine, reach the northern edge of their range in this type in the Unity area. Rare reptiles like wood turtle, spotted turtle, and ribbon snakes feed on amphibian egg masses present in isolated pools within such forests. Wood turtles frequently overwinter in river channels and forage in floodplain forests. The silver-haired bat often roosts in riparian habitats in trees with loose bark.

Ecological Services of the Focus Area

- Serves as an important large block of unfragmented forest habitat for a wide range of species including rare plants, waterfowl, wading birds, deer, moose, bobcat, woodland hawks and other wildlife.
- Retains floodwaters.
- Filters sediments and nutrients, protecting water quality.

Economic Contributions of the Focus Area

- Recharges groundwater.
- Serves as a valuable recreational resource for local residents.
- Provides outdoor classroom opportunities for Unity College and other local schools
- Provides scenic vistas and open space that raise property values.
- Provides working forestland and working farmland.



Fowler Bog, Rick Lawrence

Raised Level Bog Ecosystem: These include flat peatlands in basins with mostly closed drainage, receiving water from precipitation and runoff from the immediate surroundings. Most parts of level bogs are somewhat raised (though not domed), in which case vegetation is almost entirely ombrotrophic (dwarf shrub heath or forested bog). Other parts of the bog are not raised; in this case, vegetation is transitional (in nutrient status) between that of ombrotrophic bogs and minerotrophic fens. In all cases, Sphagnum dominates the ground surface and is the main peat constituent. The surface of the bog is generally flat and featureless though Kanokolus Bog is somewhat unique in that it hosts several secondary sphagnum pools in

the bog mat. These bogs are often at least partly treed with black spruce and larch.

Unpatterned Fen Ecosystem: Fens are peatlands in which groundwater or water from adjacent uplands moves through the area. As a result, plants are exposed to more nutrients, and the vegetation is typically different and more diverse than that of bogs. Peat is moderately- to well-decomposed and of variable thickness. The vegetation consists predominantly of sedges, grasses, reeds, and Sphagnum mosses. Bog communities, dominated by heath shrubs, may be present; though fen and bog vegetation may co-occur, in a fen ecosystem the former is more extensive.

CHARACTERISTIC SPECIES

Creeper (*Strophitus undulatus*), listed as Special Concern; **tidewater mucket** (*Leptodea ochracea*) listed as Threatened; and **yellow lampmussel** (*Lampsilis cariosa*), also listed as Threatened, are freshwater mussel species documented within the Focus Area. Freshwater mussels require clean water and certain flow and substrate conditions. They also have a unique life cycle that depends on specific fish species as larval hosts. Maine plays an important role in the conservation of freshwater mussels. With some of the most unspoiled aquatic ecosystems in eastern North America, Maine has some of the most significant remaining populations of several nationally rare freshwater mussel species and the Unity Wetland Focus Area provides some of the best habitat in the state for these species. Maintaining water quality and undisturbed aquatic habitats is essential to maintaining these species.

Atlantic salmon (*Salmo salar*) require cool, clean and free flowing waters. Atlantic salmon, an anadromous species, spends much of its life cycle in ocean waters, but travels great distances to return to its natal stream to spawn. Spawning and rearing habitat includes the gravelly substrates of fast moving streams generally near the headwaters. Dams and poorly designed culverts have blocked the passage of salmon throughout much of the state, preventing this once popular sport fish from accessing the habitats vital to its survival.

Ribbon snake (*Thamnophis sauritus*), a species of Special Concern in Maine, is a semi-aquatic snake with yellowish stripes running the length of their long, thin bodies. Habitat types frequented by ribbon snakes include vernal pools, bogs, shrub swamps, forested wetlands, wet meadows, and slow streams. They prefer the periphery of these areas where vegetation and populations of amphibians are abundant. Most of Maine's ribbon snake population occurs in southern and south-central Maine. Due to the high rates of development there, this species is vulnerable to habitat loss, fragmentation, and water quality degradation. The wetland-upland ecology of this snake



Yellow Lampmussel, Ethan Nedeau (Top)
Creeper, Ethan Nedeau (Bottom)

puts it at further risk due to inadequate regulations protecting riparian and upland habitat around many smaller wetlands

Wood turtles (*Glyptemys insculpta*), also a species of Special Concern in Maine, is primarily a northeastern species that is declining throughout its range. Maine, likely hosts some of the largest and most viable remaining populations in the U.S. The turtles overwinter in well-oxygenated streams and rivers but range widely in adjacent fields and forests for nesting and feeding. Habitat loss and degradation and collection for the pet trade are major threats to this species.

Wild garlic (*Allium canadense*), a rare plant species, is a tight clump 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.



Fowler Bog, Rick Lawrence

The flowers are pink or white, but are often replaced by sessile bulblets. Wild garlic is usually found in rich wooded bottomlands (hardwood floodplain forests) and 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.

CONSERVATION CONSIDERATIONS

- » The most important conservation strategy for aquatic features is maintaining or improving water quality within the watershed. For lands where timber harvest or development continues, buffers should be maintained around all streams, wetlands and ponds. While different species can have different buffering requirements, wider buffers provide better protection for riparian and wetland-dependent species because they not only protect water quality but also provide riparian habitat and corridor functions. Generally, better protection is afforded to wetlands and ponds if vegetation alteration is minimized within 250' of the wetland/upland border. Any timber harvesting within and adjacent to wetlands or adjacent to ponds should be implemented with strict adherence to Shoreland Zoning guidelines and Maine Forest Service Best Management Practices.
- » Freshwater mussels are sensitive to contaminants and changes in water quality and benthic habitat. Maintenance and/or improvement of habitat integrity via protection of riparian buffers is important. Any activities that may potentially degrade water quality or negatively alter habitat type (including substrate, flow rate, water levels) should be avoided. A minimum of 250-foot contiguous, forested buffer is recommended on waterways that provide habitat for rare, threatened, and endangered mussel species. Likewise, because larval freshwater mussels require a specific fish host, activities that may result in changes to the fish community or prevent access by fish should be avoided. When designing projects near known rare mussel habitat consult with an MDIFW biologist to assist with planning, and refer to the Maine Forest Service's Forestry Best Management Practices handbook or the Maine Department of Environmental Protection's Maine Erosion and Sediment Control Recommendations.
- » Improperly sized culverts and other stream crossing structures can impede movement of fish and aquatic invertebrates effectively fragmenting local aquatic ecosystems and ultimately leading to local extirpation of some species. Future management should maintain or restore the sites natural hydrology by monitoring culvert function and up-

grading culvert size for improved aquatic organism passage and accommodation of high storm water flows.

- » Invasive plants and aquatic organisms have become an increasing problem in Maine and a threat to the state's natural communities. Disturbances to soils and natural vegetation and introductions of non-native species to terrestrial and aquatic habitats can create opportunities for colonization. Landowners and local conservation groups should be made aware of the potential threat of invasive species, of methods to limit establishment, and of appropriate techniques for removal. For more information on invasive plants visit: <http://www.maine.gov/doc/nrimc/mnap/features/invasives.htm>.
- » Timber harvest in the vicinity of rare plant populations, and in floodplain forests generally, should be avoided or carefully planned to avoid adverse impacts to the biota. Machinery should not be used on the site when the ground is not frozen, as the moist ground is susceptible to rutting and soil compaction and destruction of sensitive understory flora.
- » Wetlands in particular may be vulnerable to degradation from incidental uses related to increasing residential development. Buffers can play a major role in protection here. ORV use of the area is locally heavy, and care needs to be taken that ORVs stay on existing trails and remain out of all wetlands when the ground is not frozen.
- » Conservation planning for upland and floodplain forests should include setting some areas aside from timber harvest to allow for the development of some unmanaged forest for species associated with late successional conditions.
- » With expected changes in climate over the next century, plant and wildlife species will shift their ranges. Maintaining landscape connections between undeveloped habitats will provide an important safety net for biodiversity as species and natural communities adjust their ranges to warmer climate conditions.
- » Conservation easements, fee ownership, and tree growth and open space treatments are also appropriate conservation approaches within the focus area.



Kanokulus Bog, Sebasticook Regional Land Trust

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	S4B,S4N	G5
	Creeper	<i>Strophitus undulatus</i>	SC	SNR	G5
	Wood Turtle	<i>Clemmys insculpta</i>	SC	S4	G4
	Ribbon Snake	<i>Thamnophis sauritus</i>	SC	S3	G5
	Sedge Wren	<i>Cistothorus platensis</i>	E	S1B	G5
	Tidewater Mucket	<i>Leptodea ochracea</i>	T	S2	G3G4
	Yellow Lampmussel	<i>Lampsilis cariosa</i>	T	S2S3	G3G4
	Coral Hairstreak	<i>Satyrrium titus</i>	SC		
	Great Blue Heron	<i>Ardea herodias</i>	SC		
	Atlantic Salmon	<i>Salmo salar</i>	E		
Plants	Stiff Arrow-head	<i>Sagittaria rigida</i>	T	S2	G5
	Water Stargrass	<i>Zosterella dubia</i>	SC	S3	G5
	Wild Garlic	<i>Allium canadense</i>	SC	S2	G5
	Wild Leek	<i>Allium tricoccum</i>	SC	S3	G5
Natural Communities	Raised Level Bog Ecosystem	Raised level bog ecosystem		S4	GNR
	Silver Maple Floodplain Forest	Silver maple floodplain forest		S3	GNR
	Unpatterned Fen Ecosystem	Unpatterned fen ecosystem		S4	GNR

State Status*

- E** Endangered: Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.
- T** Threatened: Rare and, with further decline, could become endangered; or federally listed as Threatened.
- SC** Special Concern: Rare in Maine, based on available information, but not sufficiently rare to be Threatened or Endangered.

*State status rankings are not assigned to natural communities.

State Rarity Rank

- S1** Critically imperiled in Maine because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres).
- S2** Imperiled in Maine because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (on the order of 20–100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.

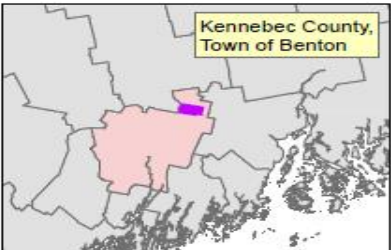
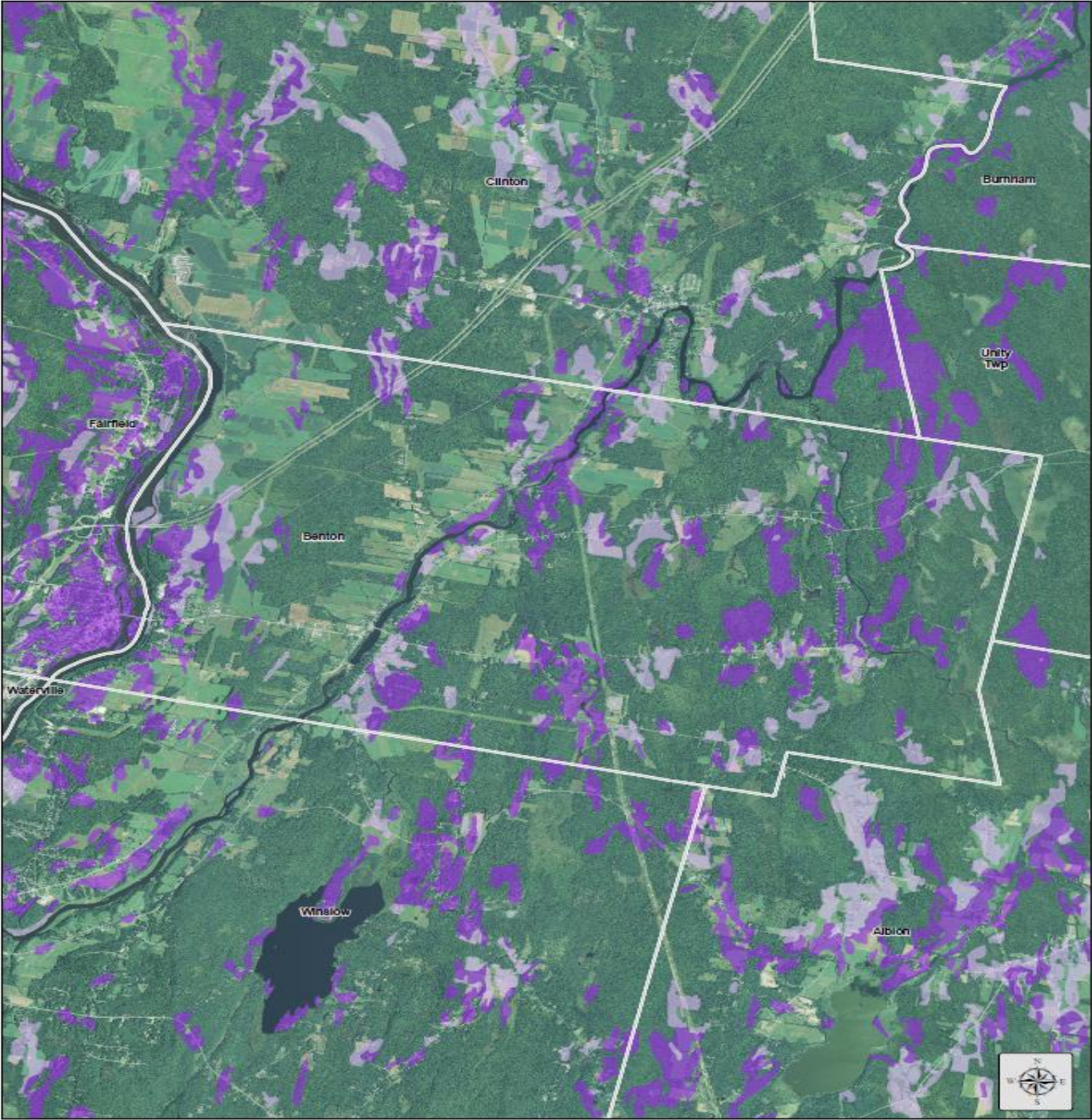
Global Rarity Rank

- G1** Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation.
- G2** Globally imperiled because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (on the order of 20–100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.

Town of Benton Comprehensive Plan
Section IV - Maps

4. AGRICULTURAL MAP(S)

Benton, Section IV Map 4.1



**Benton
Agricultural Resources**

Aerial Photo: NAIP 2013

Source Data: USDA, MEGIS, Maine DACF
Projection: UTM, NAD83, Zone 19, Meters
Produced by: Municipal Planning
Assistance Program, DACF
May 2015



0 1 2 Miles

Legend

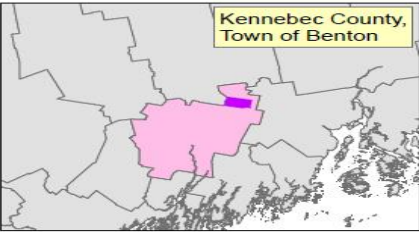
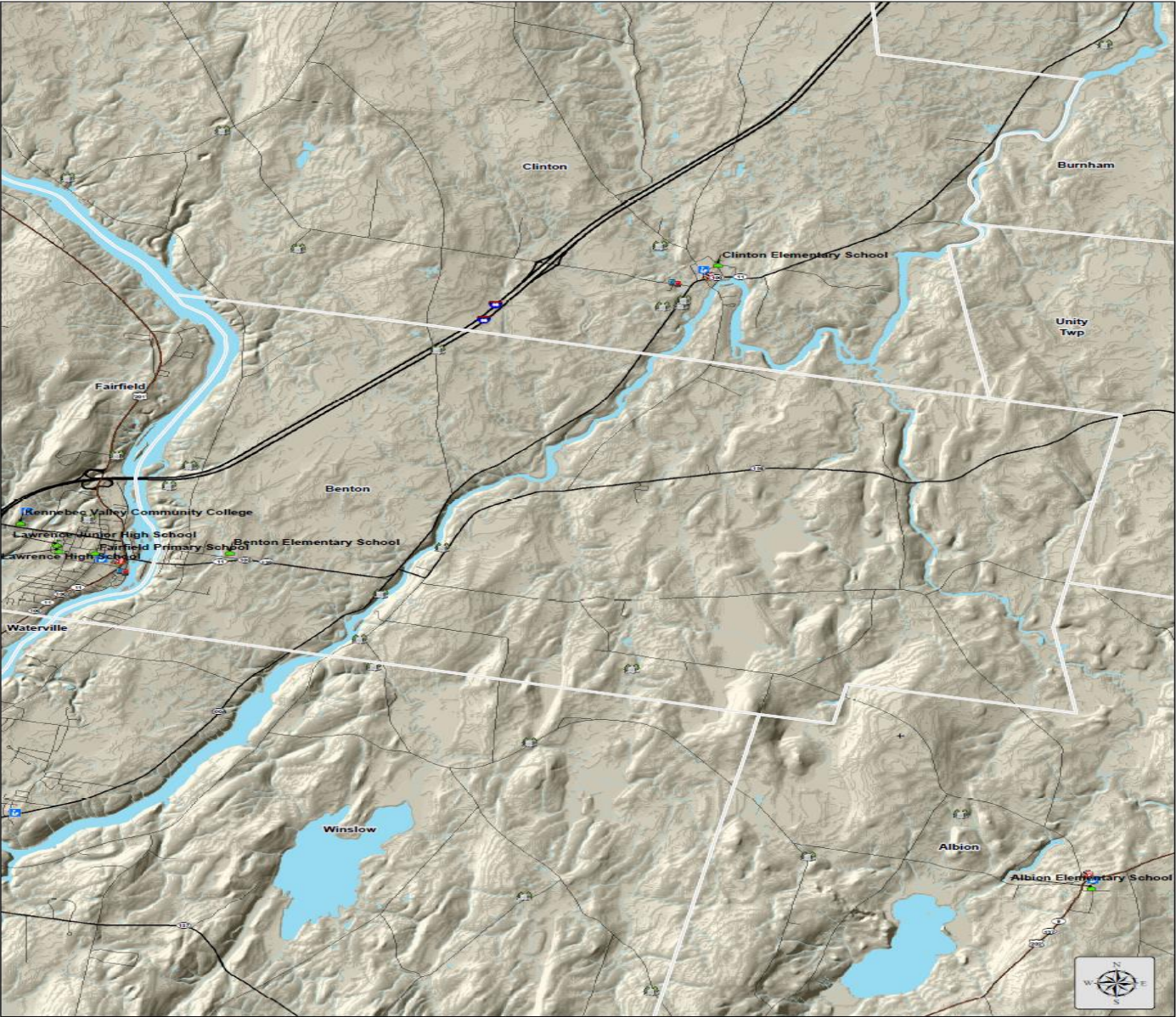
- Municipal border
- Farmland Soils**
 - Farmland of statewide importance
 - Prime farmland

Town of Benton Comprehensive Plan

Section IV - Maps

9. BENTON INFRASTRUCTURE MAP(S)

Benton, Section IV Map 9.1



Benton Infrastructure

Source Data: USDA, MEGIS, Maine DACF
Projection: UTM, NAD83, Zone 19, Meters
Produced by: Municipal Planning
Assistance Program, DACF
May 2015



0 1 2 Miles

Legend	
	Municipal border
	River/Stream
	Waterbody
	U.S. Routes
E911 Roads	
	Primary
	Secondary
	Local
	Fire Station
	School
	Police Station
	Library
	Cemetery
	Airport

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