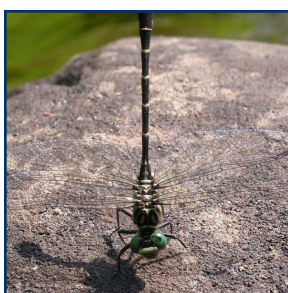
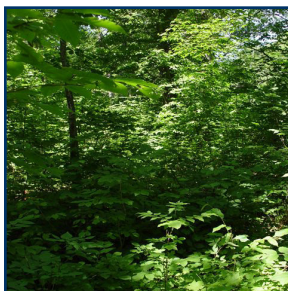


East Branch Penobscot-Seboeis River-Wassataquoik Stream



WHY IS THIS AREA SIGNIFICANT?

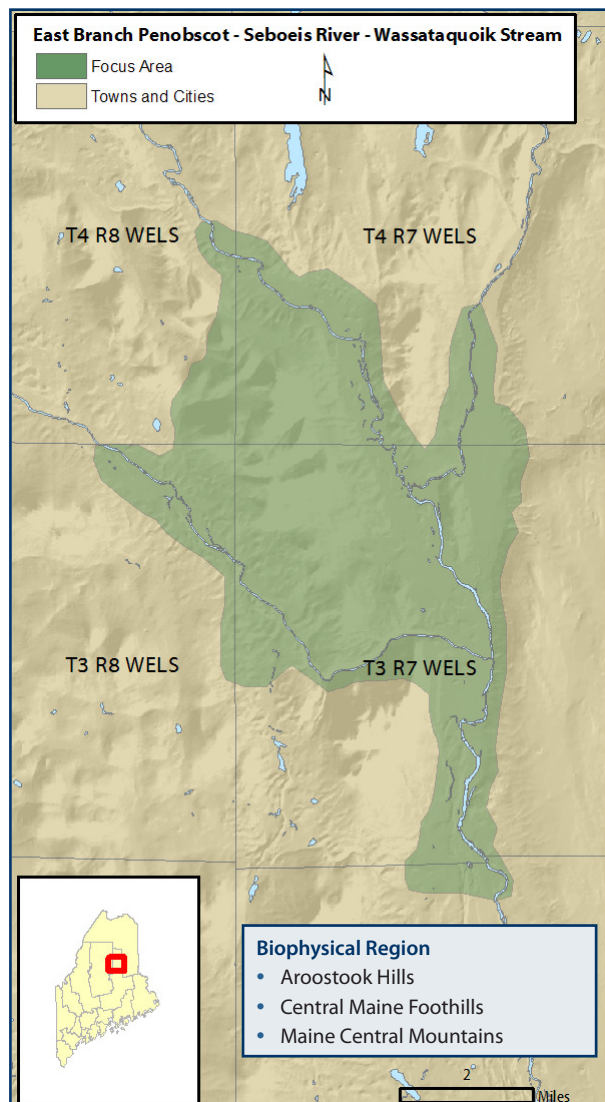
In the shadows of Baxter State Park, the East Branch Penobscot - Seboeis River - Wassataquoik Stream Focus Area encompasses an ecologically rich confluence of three of Maine's most intact and scenic waterways. The Focus Area includes significant parts of the rivers, associated floodplain forests and open streamshores, as well as the rugged Hunt, Deasey and Lunksoos Mountains. Local bedrock creates enriched soils here that support an unusual array of rare natural communities and plants, and the backwaters, pools and water quality of the river systems support a diversity of outstanding aquatic features. These are remote, highly scenic, undeveloped rivers with outstanding fishing and recreational opportunities.

OPPORTUNITIES FOR CONSERVATION

- » This Focus Area includes one of Maine's largest and least disturbed floodplain forest ecosystems.
- » Educate recreational users about the ecological and economic benefits provided by these intact river systems.
- » Encourage best management practices for forestry, vegetation clearing, and soil disturbance activities near significant features to maintain ecological functions and values, habitat connectivity for wildlife, hydrologic processes, and watershed protection.
- » Maintain intact forested buffers along water bodies and wetlands to protect water quality and provide valuable riparian habitat for wildlife.
- » Protect sensitive natural features through careful management planning on conserved lands.

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

Photo credits, top to bottom: Maine Natural Areas Program, Maine Department of Inland Fisheries and Wildlife, Maine Natural Areas Program, Ethan Nedeau, Maine Natural Areas Program



Rare Animals

Creepers
Pygmy Snaketail

Rare and Exemplary Natural Communities

Appalachian - Acadian Rivershore Ecosystem
Enriched Northern Hardwoods Forest
Hardwood Seepage Forest
Lower-elevation Spruce - Fir Forest
Montane Spruce - Fir Forest
Northern Hardwoods Forest
Sugar Maple Forest
Silver Maple Floodplain Forest
Upper Floodplain Hardwood Forest
Upper Floodplain Hardwood Forest
White Pine Forest

Rare Plants

Fragrant Cliff Woodfern
Orono Sedge
Purple Clematis
Rattlesnake Hawkweed
Squirrel-corn

Significant Wildlife Habitats

Inland Wading Bird and Waterfowl



Ecologists monitoring the Wassataquoik Ecoreserve, Maine Natural Areas Program

FOCUS AREA OVERVIEW

Numerous forested and open wetlands are associated with the floodplain of the East Branch of the Penobscot River on either side of its confluence with the Seboeis River. Collectively, these riverine wetlands form an outstanding 3,000+ acre Rivershore Ecosystem, which is the dominant feature of this Focus Area. The river confluence lies within a landscape of public and private working forests, anchored by the state's Wassataquoik Stream Ecological Reserve.

The central features of the Rivershore Ecosystem are stream bank and river floodplain forests. The steep wooded slopes of the Wassataquoik Stream corridor give way at its mouth to a broad floodplain at the confluence of the East Branch, and the vegetation reflects the effects of topography, seasonal flooding, and silt-laden rich soils. Topography within the Focus Area varies from alluvial gully and ridge formations in the Penobscot Floodplain to extremely rugged slopes flanking Wassataquoik Stream and Hunt and Lunksoos Mountains.

Major vegetation gradients in the floodplain system are driven by minor elevation differences, which in turn reflect the duration and intensity of seasonal flooding. In terrestrial communities, slope and aspect have historically played a major role in

Public Access Opportunities

- Wassataquoik, MBPL
- Millinocket to Matagamon Easement, MBPL

the formation of northern hardwoods versus conifer forests. However, forest management and fire history have also had a significant influence on the forest types and conditions within the Focus Area. Charcoal remains have been found in soils of several upland communities on Hunt Mountain. The most intact natural communities are those within the Penobscot floodplain and in parts of the east side of Hunt Mountain. The forests west of Deasey Brook have been heavily damaged by spruce budworm and wind damage.

RARE AND EXEMPLARY NATURAL COMMUNITIES

Appalachian – Acadian Rivershore ecosystem: This extensive (3,000+ acre) ecosystem shows little evidence of human disturbance and is a mosaic of floodplain forest, alder thicket, and grassy shrub marsh natural communities. There are no

impoundments on this section of the East Branch of the Penobscot River, or on Wassataquoik Stream, so natural flooding processes occur. Beaver activity is frequent along Dry Brook near the Seboeis River oxbow.

Silver Maple Floodplain Forest: The floodplain of the East Branch, on either side of the Wassataquoik's mouth, is a fine example of a Silver Maple Floodplain Forest. It is over a mile in length and displays excellent gradations from the river's edge to the uplands back up towards Hunt Mountain. The Silver Maple Floodplain Forest has an open canopy of widely spaced and large crowned silver maples that grade in and out of shrub thickets and grassy meadows. Impressive silver maples form an arching open canopy (less than 50% cover) over a dense carpet of ostrich fern. Large fallen trees are scattered along the edges of gullies and old channels, leaving large canopy gaps. The largest trees are about 100 years old and measure over 40" in diameter. Grassy Shrub Marsh, an open wetland type, is a common community component scattered throughout this ecosystem. These wetland meadows are dominated by tussock sedge and bluejoint grass, and they grade into the Silver Maple Floodplain Forest.

Upper Floodplain Hardwood Forest: As one moves away from the river, the gradual change in elevation leads to replacement of the silver maple by sugar maple and a change in the understory vegetation as well. A 240 acre Upper Floodplain Hardwood Forest occurs along a slightly raised natural levee formed by the East Branch – slightly higher than the Silver Maple Floodplain forest. The Upper Floodplain Forest is dominated by sugar maple, hop-hornbeam, and yellow birch, with beaked hazelnut abundant in the understory. Larger trees include a 25 inch sugar maple and 31 inch yellow birch. Numerous vernal pools occupy old river channels and provide habitat for amphibian reproduction. Parts of the stand were historically selectively logged, with an occasional large white pine or red spruce cut, but these limited intrusions to the site have recovered to a natural state.

Enriched Northern Hardwoods Forest: The northeastern end of Lunksoos Mountain is exposed, with an eastern facing cliff of mafic (magnesium-rich) bedrock of volcanic origin. An Enriched Northern Hardwood Forest occurs between the very steep talus slope below this cliff and a gentle lower slope below. This natural community slope is covered with a moderately sized sugar maple and beech stand with a rich mixture of yellow birch, white ash, scattered red spruce, and basswood.

Hardwood Seepage Forest: This small acre Hardwood Seepage Forest occurs in the southern portion of the Focus Area east of the East Branch. It is a very gently sloping forest on saturated soils at the base of a steeper slope, with hemlock dominant and herbaceous vegetation showing a mix of enriched species (Christmas fern) and wetland species (sensitive fern, cinnamon fern, and fowl mannagrass).

Sugar Maple Forest: The eastern slopes of Hunt Mountain

Ecological Services of the Focus Area

- Provides habitat for waterfowl, wading birds, deer, moose, and fisheries.
- Contributes to water quality and natural floodplain dynamics of the Seboeis, Wassataquoik and East Branch of the Penobscot Rivers, storing flood waters and minimizing downstream flooding.
- Provides ecological connectivity and habitat for area-sensitive wildlife species.
- Provides water quality protection for several headwater streams.
- Together with conserved lands extending westward to Baxter State Park, serves as an important block of conserved habitat for a wide range of species including rare plants, waterfowl, wading birds, deer, and other wildlife.
- Supports regional biodiversity by providing habitat for rare plants, animals, and natural communities.

Economic Contributions of the Focus Area

- Provides opportunities for research and education.
- Attracts tourism and recreation for wildlife viewing, leaf-peeping, paddling, hunting, angling, skiing, and snowmobiling.
- Protects water quality of downstream resources.
- Provides high value forest products that support the regional economy.
- Serves as a valuable recreational resource for local residents.

support Sugar Maple Forest dominated by species commonly found in a northern hardwood forest, such as beech, yellow birch, and sugar maple, but also including scattered white ash and several herbaceous plants more characteristic of enriched soils. Species found here include blue cohosh, spikenard, zigzag goldenrod, white baneberry, Dutchman's breeches, maidenhair fern, plantain leaved sedge, and the rare American ginseng. Some portions of the forest occur on a very steep and rocky slope – likely inoperable from a timber standpoint. Pit and mound topography, some large coarse woody debris, the presence of multiple age classes of maples and scattered large individuals all suggest that large sections of this site have only been minimally disturbed by past forest management. One sugar maple was cored and aged to be approximately 135 years old. Sugar maple and white ash seedlings are abundant in the understory. The forest is bisected by several small intermittent streams, which run downslope towards the East

Branch.

White Pine Forest: This 30 acre old stand of White Pine Forest at Hunt Mountain Ridge towers over a younger northern hardwood forest, creating a two-storied stand on the steep banks of the stream and providing a scenic vista as one looks through the valley. The old white pine component in this northern hardwood stand serves as a living museum depicting the size and abundance of pine which the early loggers encountered as they made their way up the Penobscot River basin. Pines measure 100-105 feet in height in the overstory, and the younger hardwood regeneration, rising 60 to 75 feet, contains American beech, red maple, paper birch, and quaking aspen. Most of the pine reproduction is found on the lower slopes while the hardwood seedlings and saplings occupy the ground on the upper slopes.

Fire has left charcoal in both the organic and mineral soil, as well as pronounced fire scars on the lower portion of the white pine trunks, demonstrating the fire's movement on steep terrain. In form, the white pine trees are straight but have developed rot throughout the lower boles as a result of the fire damage.

CHARACTERISTIC SPECIES

The **creeper** (*Strophitus undulatus*) is a small, rare freshwater mussel that has been found in the East Branch. Although widely distributed across the state and throughout its range, the creeper is rarely abundant, and like many species of freshwater mussels, it is believed to be in decline nationally. In Maine, usually fewer than ten individuals are found at a single location, and there is considerable question about the long-term viability of such small populations. The creeper prefers clean, flowing water.

The **pygmy snaketail** (*Ophiogomphus howei*), a rare riverine dragonfly, has also been found in the East Branch. It typically inhabits sandy or coarse cobble in swift streams and rivers, requiring high water quality and relatively stable flow. Larvae are especially intolerant of stagnant water conditions downstream from dams.

American ginseng (*Panax quinquefolius*) is found with other indicators of soil enrichment in the sugar maple forest at Hunt Mountain. Ginseng often grows at the base of rock outcrops or on hill slopes where nutrient-rich deposits have collected. It does not spread vegetatively, and most Maine populations have fewer than 1-2 dozen plants.

The enriched northern hardwood forest at Lunksoos Mountain hosts a large population of the rare **squirrel-corn** (*Dicentra canadensis*) and a small population of **fragrant cliff wood-fern** (*Dryopteris fragrans*). Like ginseng, both species are restricted

to areas with unique soil or bedrock characteristics (high pH and/or calcium content). **Orono sedge** (*Carex oronensis*), one of Maine's few endemic species, has been found at Hunt farm, an abandoned farm with fields that have long since grown up to forest. Orono sedge, a species typically dependant on periodic disturbance, grows near the river's edge in an area by a small cottage that is mowed.

Purple clematis (*Clematis occidentalis* var. *occidentalis*) is known from two locations, near the confluence of the East Branch and the Seboeis Rivers in a circumneutral riverside community, and at the east ridge of Hunt Mountain in an oak-ash woodland.

CONSERVATION CONSIDERATIONS

- » Research and education are actively encouraged on all state Ecological Reserves. The state has developed a long term ecological monitoring program for Reserves and seeks opportunities to promote research efforts that complement its monitoring program.
- » Maintaining the natural communities and other sensitive features within the focus area will be best achieved by working to conserve the integrity of the larger natural systems in which these features occur. This can be accomplished through management planning on conserved lands and encouraging sustainable forest management on remaining actively managed private lands. Where rare and exemplary natural communities occur, these should be conserved through appropriate forest management activities, including avoidance and limited, ecologically sensitive harvesting.
- » Freshwater mussels are sensitive to contaminants and changes in habitat. Maintenance and/or improvement of water quality and habitat integrity via protection of riparian buffers is essential. 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 mussel habitat consult with a Maine Department of Inland Fisheries and Wildlife 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.
- » 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 adjust their ranges to future climate conditions.

- » 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.
- » 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.
- » The integrity of wetlands and the processes and life forms

they support including rare plants and animals are dependent on the maintenance of the current hydrology and water quality of the site. Intensive timber harvesting, vegetation clearing, soil disturbance, new roads, and development on buffering uplands can result in greater runoff, sedimentation, and other non-point sources of pollution that can degrade the high quality natural systems that occur here.

- » This area includes Significant Wildlife Habitat for waterfowl and wading birds. Both land managers and private landowners should follow best management practices in these areas. Maintaining wide forested buffers along all lakes, rivers, streams, and wetlands will provide valuable riparian habitat for many wildlife species. Consult with a Maine Department of Inland Fisheries and Wildlife biologist prior to planning any activity that may disturb the forest around mapped Inland Waterfowl and Wading Bird Habitats.
- » Recreational use of this focus area should be managed to prevent potential negative impacts on important resources and recreational values. Education of users can help to limit any damage from recreational activities, especially in sensitive areas such as lake and pond shores, ridge lines, and summits. Both motorized and non-motorized users should be encouraged to minimize off-trail use and practice minimum impact camping. Motorized recreational use should be excluded from all rare and exemplary natural communities, except on authorized trails.



Wassataquoik Ecoreserve, Maine Natural Areas Program

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Creeper	<i>Strophitus undulatus</i>	SC	SNR	G5
	Pygmy Snaketail	<i>Ophiogomphus howei</i>	SC	S2S3	G3
Plants	Fragrant Cliff Wood-fern	<i>Dryopteris fragrans</i>	SC	S3	G5
	Orono Sedge	<i>Carex oronensis</i>	T	S3	G3
	Purple Clematis	<i>Clematis occidentalis var. occidentalis</i>	SC	S3	G5T5
	Rattlesnake Hawkweed	<i>Hieracium venosum var. nudicaule</i>	E	S1	G5T4Q
	Squirrel-corn	<i>Dicentra canadensis</i>	T	S1	G5
Natural Communities	Appalachian - Acadian River-shore Ecosystem	Appalachian - acadian rivershore ecosystem		SU	GNR
	Enriched Northern Hardwoods Forest	Maple - basswood - ash forest		S3	GNR
	Hardwood Seepage Forest	Hardwood seepage forest		S3	GNR
	Lower-elevation Spruce - Fir Forest	Spruce - fir - broom-moss forest		S4	GNR
	Montane Spruce - Fir Forest	Spruce - fir - wood-sorrel - feather-moss forest		S4	G3G5
	Northern Hardwoods Forest	Beech - birch - maple forest		S4	G3G5
	Sugar Maple Forest	Semi-rich northern hardwood forest		S4	G4
	Silver Maple Floodplain Forest	Silver maple floodplain forest		S3	GNR
	Upper Floodplain Hardwood Forest	Hardwood river terrace forest		S3	GNR
	Upper Floodplain Hardwood Forest	Hardwood river terrace forest		S3	GNR
	White Pine Forest	White pine - mixed conifer forest		S4	G5

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.