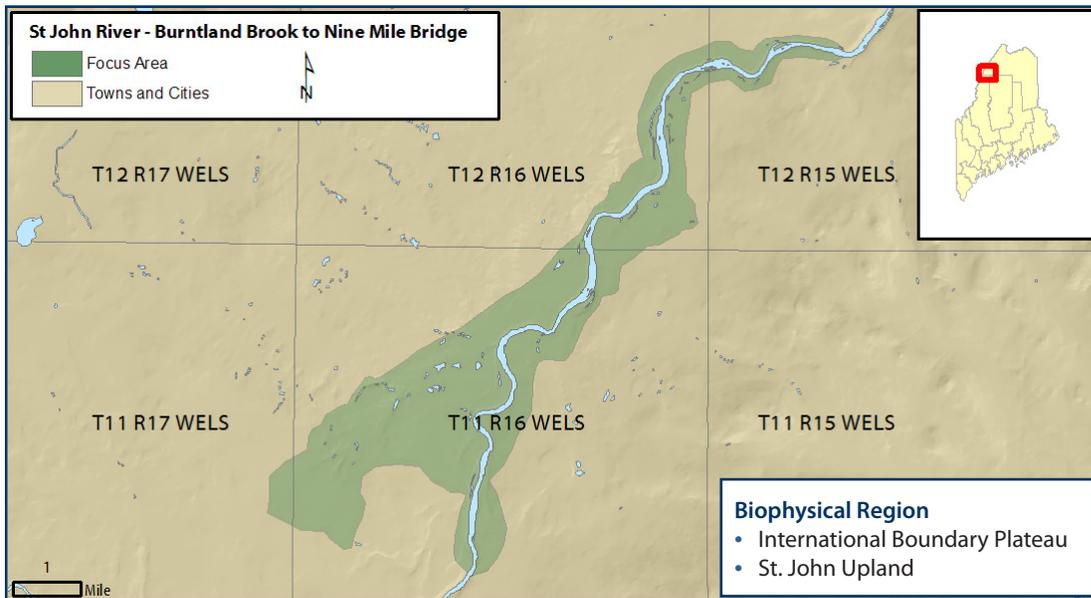


St. John River - Burntland Brook to Nine Mile Bridge



WHY IS THIS AREA SIGNIFICANT?

The St. John River corridor supports one of the highest concentrations of rare plants in Maine. The river’s unusual ecological processes create plant communities seldom seen elsewhere. This Focus Area supports ten different types of rare and exemplary natural communities, one rare ecosystem, and provides multiple sites for twelve rare plant species. The Focus Area’s setting within a remote, lightly roaded, and undeveloped landscape means that many of the natural communities here are in excellent condition. The Focus Area provides high value habitat to a broad array of wildlife species, including wide-ranging species. Over 3,000 acres of Significant Wildlife Habitat for waterfowl and wading birds are found throughout the Focus Area as well.

OPPORTUNITIES FOR CONSERVATION

- » Maintain wide forested buffers along the river banks and stream corridors.
- » Avoid degradation of water quality and hydrology that can be caused by poor timber management, road building, and vegetation clearing on surrounding lands.
- » Protect sensitive natural features through careful management planning on conserved lands.
- » Educate recreational users on proper backcountry etiquette, including leave-no-trace camping.

Rare Animals

Broadtailed Shadowdragon

Rare Plants

- | | |
|---------------------------|----------------------|
| Alpine Sweet-broom | Nantucket Shadbush |
| Clinton’s Bulrush | New England Violet |
| Dry Land Sedge | Northern Painted Cup |
| Garber’s Sedge | Soft-leaf Muhly |
| Gaspé Shadbush | Swamp Birch |
| Glaucous Rattlesnake Root | Swarthy Sedge |
| Mistassini Primrose | Vasey Rush |

Rare and Exemplary Natural Communities

- | | |
|---------------------------|--------------------|
| Black Spruce Barren | Red Pine Woodland |
| Black Spruce Woodland | Rivershore Outcrop |
| Early Successional Forest | Riverside seep |
| Laurentian River Beach | Sedge-Heath Fen |
| Low Sedge Fen | Tall Grass Meadow |
| Patterned Fen Ecosystem | |

Significant Wildlife Habitats

Inland Waterfowl and Wading Bird Habitat

Public Access Opportunities

- Upper St. John River, TNC

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

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St. John River, Rivershore Outcrop, Maine Natural Areas Program

FOCUS AREA OVERVIEW

This Focus Area includes over 12 miles of the upper St. John River and adjacent lands in western Aroostook County, from just above Burntland Brook to just below Nine Mile Bridge. This long, narrow Focus Area includes the river corridor, associated wetlands, and an upland buffer. On its southern end, it widens to include some exemplary barren and wetland communities in the upper reaches of the Burntland Brook watershed. The entire Focus Area has been conserved through The Nature Conservancy's Upper St. John River conservation project. The Conservancy owns most of the Focus Area, except for the northeastern stretch, which is protected via conservation easement.

The ecology of the St. John River corridor is governed by the river's dynamic cycles of freezing, thawing, and flooding. Each spring, the headwaters of the river melt first, causing ice jams and flooding until the downstream portions of the river melt, the ice jams break, and the floodwaters rush downstream. The combination of ice scour and violent flooding, along with cold winters, make the St. John corridor a uniquely harsh and challenging environment. Only plants with special adaptations to this environment can survive here. As a result, the river banks and corridor support one of the highest concentrations of rare

plants and natural communities in Maine.

There is an exceptionally rich concentration of rare plants along the river in the northeast section of the Focus Area, just upstream from Nine Mile Bridge. Thirteen populations of eight different rare plant species occur here. This portion of the Focus Area also supports four rare natural communities. Further upstream, at a bend in the river where Burntland Brook joins the St. John, there are three rare natural communities. A circumneutral riverside seep community here supports the rare Mistassini primrose (*Primula mistassinica*). A black spruce woodland community found to the west of the river here appears to have been shaped by fire sometime in the past 80 years.

About a mile east of the river and just north of Burntland Brook is a large area of exemplary early successional forest that appears to have originated following fire. On the other side of Burntland Brook and further west (about 2.5 miles from the river) is a small but ecologically intact patterned fen ecosystem. This system supports a population of the rare swamp birch (*Betula pumila*).

The portion of the Focus Area on the east shore of the river, northeast of Moody Bridge, is underlain by a well-drained, nearly level deposit of sand and gravel, which has provided a good setting for a small airstrip and recreation camp. The forested area around the airstrip and logging camp is a good example of a rare red pine woodland natural community. North of the airstrip is an excellent example of the rare black spruce-heath barren natural community. These communities likely originated following a large fire in the area in the 1920s.

On the eastern rivershore at the southern end of the Focus Area is a good example of the rare Laurentian river beach natural community, which grades into a rare tall grass meadow community downstream. The Laurentian river beach community provides habitat for the very rare Garber's sedge.

This section of the river is part of the storied St. John River paddling trip, known for its wild and remote character, wildlife viewing, and seasonal whitewater. The Focus Area includes three riverside campsites, and the intact natural communities along the river corridor are an important part of the unique wilderness experience that draws visitors here.

Fisheries resources in this section of the main stem St. John River were historically for wild brook trout. Although populations of trout may still exist in some of the cold tributaries in this section of the St. John, muskellunge are now the most prevalent sport fish. Muskellunge were introduced into Lac Frontier, Quebec commencing in 1970 by government biologists and have now spread throughout the St. John drainage from headwaters to the Bay of Fundy. Smallmouth bass are also now present in the St. John River as the result of an illegal introduction in a tributary system located in New Brunswick



Early Successional Forest, Maine Natural Areas Program

Ecological Services of the Focus Area

- Contributes to water quality and ecological integrity of St. John River.
- Provides habitat connectivity for wildlife.
- Supports the river's natural floodplain dynamics, minimizing downstream flooding.
- Rare species and communities contribute to regional, statewide and global biodiversity.

Economic Contributions of the Focus Area

- Attracts tourism for paddling, wildlife viewing, hunting, and angling.
- Supports valuable recreational fisheries.
- Valuable recreational resource for local residents and visitors from around the world.

above Grand Falls. As their population continues to increase, bass will continue to spread upstream into this section of the St. John River where they will provide an additional sport fishery. Small coldwater tributaries to this section of the St. John River in the Focus Area should continue to support resident populations of brook trout.

RARE AND EXEMPLARY NATURAL COMMUNITIES

Black spruce woodlands are open canopy woodlands dominated by stunted black spruce. Other tree species, including red spruce, pitch pine, or white pine, may be mixed in, but black spruce is strongly dominant. The understory is made up of dwarf heath shrubs, such as black huckleberry, lowbush blueberry, and sheep laurel. The herb layer is typically dominated by lichens and mosses (especially reindeer lichens), with few herbs, including bracken fern and bunchberry. These woodlands usually occur on cool, moist sites where the bedrock is covered with only a thin, patchy layer of acidic soil. In Maine, this community is found most often in eastern coastal areas, so this northern example is unusual. The example in this Focus Area is located along the bend of the St. John River just north of Burntland Brook.

Early successional forest is a community type that arises following fire, typically on poor, dry soils. Dominated by aspens, birches, and red maple, this community can occur as a closed forest or open woodland. The shrub layer is variable but often includes shadbush or gray birch. Lowbush blueberry, black huckleberry, and bracken fern are common in the understory. A wide variety of wildlife uses early successional forest habitat. These communities will naturally transition to other forest types over time.

Red pine woodlands are open canopy woodlands dominated primarily by red pine. Areas of exposed bedrock are common, and dry site lichens including reindeer moss occur on the bedrock and areas with very thin soils. This community type is frequently a result of past fire, and this site shows evidence of past fire. This community may support rare moths such as the oblique zale, pine sphinx, and pine pinion, that utilize hard pines as larval host plants, but surveys would be needed to determine if any of these species occur at this site. Less than a dozen red pine woodlands have been documented in Maine. The area around the Red Pine airstrip and recreation camp is a good example of this rare community.

Circumneutral riverside seeps are communities that are constantly saturated by relatively high pH groundwater seepage, occurring along large rivers where there are naturally fluctuating water levels and occasional ice scour. They are found on coarse-textured soils, from steep gravel banks to lower shore flats with cobble. Ice scour maintains a semi-open shoreline, with a mixture of shrubs and herbaceous vegetation. Patches of riparian shrubs like willows and sweet gale may be found alongside a variety of both native and introduced herbaceous plants, as well as mosses. Sedges and rushes, including a number of rare species, are typically common in these communities.

Circumneutral riverside seeps are mostly found in northern Maine, especially along the St. John River. In this Focus Area it occurs at two locations, at Nine Mile Bridge and along the bend of the St. John River upstream from Nine Mile Bridge. Conservation of these sites involves maintaining an intact forest buffer to ensure the correct light conditions and flow of seepage water, so clearing of the adjacent overstory has led to degradation of some areas. Foot traffic typically poses no threat to this community, but the effects of off-road vehicles using the shoreline can be severe.

The **tall grass meadow community** is found along stream shores and river floodplains, in areas that may be flooded at times. In this Focus Area it is found at Nine Mile Bridge as well as further upstream. The vegetation is open and dominated by bluejoint grass, sometimes with sedges or other herbaceous plants. Alder, willow, meadowsweet, and other shrubs may be mixed in, but grass is the dominant vegetation. This community is maintained by periodic flooding and/or fire, which keeps trees and shrubs from invading in large numbers.

CHARACTERISTIC RARE SPECIES

Mistassini primrose (*Primula mistassinica*) grows along river shores in northern Maine. In this Focus Area, hundreds of plants have been identified at the bend of the St. John River upstream from Nine Mile Bridge in the circumneutral riverside

seep along both banks. The plant is one of the first to bloom in early spring, its flowers pale pink to deep rose, with a conspicuous yellow eye in the center. The flowers have 5 petals and stand only 2-4 in. (5-10 cm) from the ground, singly or in clusters. The small, toothed leaves form a basal rosette, usually only 1-3cm across. The plant's peak bloom coincides with peak canoeing season along the St. John River, but it is easily overlooked when not in flower. In Maine it is at the southernmost extent of its range, and prefers the wettest, seepiest spots, such as on gravel or dripping rock ledges along the rivershore. The plant is named for Lake Mistassini, Quebec's largest natural lake. It is listed as a species of Special Concern in Maine.

New England violet (*Viola novae-angliae*) is a perennial herb of Special Concern, due to its small range in Maine, where it is restricted to moist, limestone ledges along a few select rivers. The stemless plant has thick, short rhizomes and narrow, triangular leaves with heart-shaped bases. The flowers are blue to purple, with a slight red tint. The upper petals are often curved backward. A distinctive feature about this violet is that the leaves, leaf stems, and flower stems are all hairy. About ten plants were found along the northern shoreline at Nine Mile Bridge.

Swamp birch (*Betula pumila*), also called dwarf, bog or low birch, is a medium-sized shrub of Special Concern, found in bogs and wooded swamps. The small, distinctive leaves are almost round, lighter green or whitish beneath, with coarse teeth along the edges. New leaves are fuzzy when young but



New England Violet, Maine Natural Areas Program

lose their hair as they age. The bark does not shred or peel, and the fruits, or catkins, are 2-3cm long. The shrub may form colonies as well as hybridize with other birches. Native Americans would inhale the smoke of burning catkins to improve respiration. In Maine, swamp birch is at the easternmost part of its range and occurs sporadically. A large swamp birch population was identified in the patterned fen south of Burntland Brook on the western edge of this Focus Area.

CONSERVATION CONSIDERATIONS

- » Forested buffers along the St. John River serve several important functions. They decrease erosion and nutrient runoff, help prevent the spread of invasive plants, and provide habitat for some rare plant species. These buffers also provide valuable riparian habitat for many wildlife species. Unchecked erosion can cause formerly stable banks to slump and completely wash away under heavy runoff conditions. Maintaining or restoring a healthy and wide buffer of natural forest is perhaps the single most important action that can be taken to protect the integrity of the St. John River ecosystem.
- » The health of the St. John River ecosystem and the survival of its many rare plants depend on the area's hydrology and water quality. Dam construction and other human activities that disrupt the natural cycle of spring flooding and ice-scouring that take place on the St. John River could have devastating consequences for the rich diversity of rare plant species that are found in this Focus Area. Intensive timber harvesting, vegetation clearing, soil disturbance, road building, and development on buffering uplands can result in greater runoff, sedimentation, and other non-point sources of pollution that degrade water quality.
- » Travel along the riverbank, especially by ATVs and other vehicles, can destroy plants, cause erosion, and promote channelization of the riverbank. No vehicular traffic should be allowed along the riverbank. Traveling along the river by foot or canoe instead of vehicle can help prevent erosion and protect plant communities. Education of recreational boaters can help to minimize impacts from camping and day use along the riverbank.
- » Intact, naturally vegetated buffers of 250 feet or more should be maintained around known populations of rare plants.
- » The integrity of wetlands and the processes and life forms they support are dependent on the maintenance of the current hydrology 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. Wide forested buffers should be maintained around all of the wetlands in the focus area, especially the rare patterned

fen ecosystem. Buffers of intact natural forest can help protect wetlands from the impacts of nearby management activities.

- » 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.
- » 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.
- » 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/or of appropriate techniques for removal. For more information on invasive plants visit: <http://www.maine.gov/doc/nrimc/mnap/features/invasives.htm>. There is a single known population of purple loosestrife along the stretch of the St. John River north of 9 Mile Bridge. This invasive plant is likely coming from Quebec where it is common. The Nature Conservancy is considering methods of eradication.



Broadtailed Shadowdagon Male, B. Nikula

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rar-ity Rank	Global Rarity Rank	
Animals	Broadtailed Shadowdragon	<i>Neurocordulia michaeli</i>	PT	S3S4	G3G4	
	Alpine Sweet-broom	<i>Hedysarum alpinum var. americanum</i>	SC	S3	G5T5	
Plants	Clinton's Bulrush	<i>Trichophorum clintonii</i>	SC	S3	G4	
	Dry Land Sedge	<i>Carex siccata</i>	SC	S2	G5	
	Garber's Sedge	<i>Carex garberi</i>	SC	S2	G5	
	Gaspe Shadbush	<i>Amelanchier sanguinea var. gaspensis</i>	SC	S2	G5T4	
	Glaucous Rattlesnake Root	<i>Prenanthes racemosa</i>	SC	S3	G5	
	Mistassini Primrose	<i>Primula mistassinica</i>	SC	S3	G5	
	Nantucket Shadbush	<i>Amelanchier nantucketensis</i>	T	S2	G3Q	
	New England Violet	<i>Viola novae-angliae</i>	SC	S2	G4Q	
	Northern Painted Cup	<i>Castilleja septentrionalis</i>	SC	S3	G5	
	Soft-leaf Muhly	<i>Muhlenbergia richardsonis</i>	SC	S3	G5	
	Swamp Birch	<i>Betula pumila</i>	SC	S2S3	G5	
	Swarthy Sedge	<i>Carex adusta</i>	E	S2	G5	
	Vasey Rush	<i>Juncus vaseyi</i>	E	S1	G5	
	Natural Communities	Black Spruce Barren	Spruce - heath barren		S2	G5
		Black Spruce Woodland	Black spruce woodland		S3	G4
Early Successional Forest		Aspen - birch woodland/forest complex		S5	G5	
Laurentian River Beach		Sand cherry - tufted hairgrass river beach		S2	G3	
Low Sedge Fen		Low sedge - buckbean fen lawn		S3	GNR	
Patterned Fen Ecosystem		Patterned fen ecosystem		S3	GNR	
Red Pine Woodland		Red pine woodland		S3	G3G5	
Rivershore Outcrop		Bluebell - balsam ragwort shoreline outcrop		S3	G3	
Riverside Seep		Circumneutral riverside seep		S2	G2	
Sedge - Heath Fen		Sedge - leatherleaf fen lawn		S4	G4G5	
Tall Grass Meadow		Bluejoint meadow		S3	G4G5	

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.