

8.3 THE THOROUGHFARE

8.3.1 An Introduction to the Thoroughfare

The Thoroughfare, Oneida County, is a narrow passage-way that connects Big Lake to Whitefish Lake. It has a maximum depth of 12 feet and a surface area of 175 acres. The Thoroughfare contains 35 native plant species, of which coontail was the most common plant as determined through the point-intercept survey. Wild rice, an emergent species, was found in great abundance as well but was not accounted for as often using the point-intercept methodology. No exotic plants were observed during the 2010 lake surveys.

Field Survey Notes

Much undeveloped shoreline observed along the Thoroughfare. Fluctuating water levels made access to Whitefish Lake difficult in mid-April.

Numerous emergent and floating-leaf aquatic plants observed during point-intercept survey, including wild rice, sedge species, cattails, white water lilies, spatterdock and watershield.



Photo 8.3.1-1 The Thoroughfare, Oneida County

Lake at a Glance – The Thoroughfare

Morphology	
Acreage	175
Maximum Depth (ft)	12
Shoreline Complexity	13.5
Vegetation	
Curly-leaf Survey Date	June 17, 2010
Comprehensive Survey Date	August 8 & 9 2010
Number of Native Species	35
Threatened/Special Concern Species	-
Exotic Plant Species	-
Simpson's Diversity	0.91
Average Conservatism	6.9

8.3.2 The Thoroughfare Watershed Assessment

Because the Thoroughfare is more of a passage between lakes than a lake per se, watershed modeling was not conducted as a part of this project. A shoreline assessment, however, was completed as described below.

As mentioned previously in the Chain-wide Watershed Section, one of the most sensitive areas of the watershed is the immediate shoreland area. This area of land is the last source of protection for a lake against surface water runoff, and is also a critical area for wildlife habitat. In late summer of 2010, the Thoroughfare's immediate shoreline was assessed in terms of its development. The Thoroughfare has stretches of shoreland that fit all of the five shoreland assessment categories. In all, 5.2 miles of natural/undeveloped and developed-natural shoreland (77% of the entire shoreline) were observed during the survey (Figure 8.3.2-1). These shoreland types provide the most benefit to the lake and should be left in their natural state if at all possible. During the survey, 0.4 miles of urbanized and developed-unnatural shoreland (6% of the total shoreline) was observed. If restoration of the Thoroughfare shoreline is to occur, primary focus should be placed on these shoreland areas as they currently provide little benefit to, and actually may harm, the lake ecosystem. The Thoroughfare Map 1 displays the location of these shoreline lengths around the entire lake.

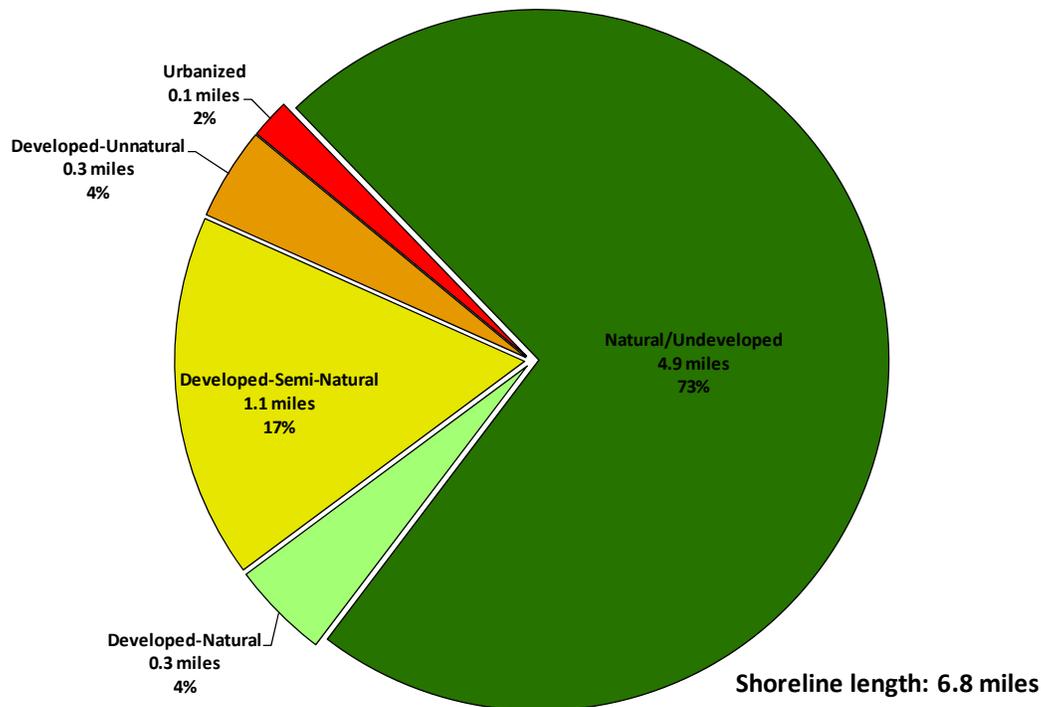


Figure 8.3.2-1. The Thoroughfare shoreland categories and total lengths. Based upon a late summer 2010 survey. Locations of these categorized shorelands can be found on the Thoroughfare Shoreline Condition Map.

8.3.3 The Thoroughfare Water Quality

Water quality studies were not completed on the Thoroughfare as a part of this project.

8.3.4 The Thoroughfare Aquatic Vegetation

The curly-leaf pondweed survey was conducted on the Thoroughfare on June 17, 2010. This meander-based survey did not locate any occurrences of this exotic plant, and it is believed that this species either does not currently exist in the Thoroughfare or is present at an undetectable level.

The aquatic plant point-intercept survey was conducted on the Thoroughfare on August 8 & 9 2010 by Onterra. The floating-leaf and emergent plant community mapping survey was completed on August 10 to create the aquatic plant community map (The Thoroughfare Map 2) during this time. During all surveys, 35 species of native aquatic plants were identified in the Thoroughfare (Table 8.3.4-1). 25 of these species were sampled directly during the point-intercept survey and are used in the analysis that follows. Aquatic plants were found growing to a depth of nine feet. As discussed later on within this section, the species found in this survey indicate that the overall aquatic plant community is healthy and diverse.

Of the 139 point-intercept locations sampled within the littoral zone, approximately 61% contained aquatic vegetation. Approximately 5% of the point-intercept sampling locations where sediment data was collected at were sand and 95% consisted of a fine, organic substrate (muck). No rocky areas were encountered (Chain-wide Fisheries Section, Figure 3.4-5).

Table 8.3.4-1. Aquatic plant species located in the Thoroughfare during the 2010 aquatic plant surveys.

Life Form	Scientific Name	Common Name	Coefficient of Conservatism (c)	Onterra 2010
Emergent	<i>Calla palustris</i>	Water arum	9	I
	<i>Carex aquatilis</i>	Water sedge	7	I
	<i>Carex utriculata</i>	Northwest Territory sedge	7	I
	<i>Dulichium arundinaceum</i>	Three-way sedge	9	I
	<i>Eleocharis palustris</i>	Creeping spikerush	6	X
	<i>Pontederia cordata</i>	Pickernelweed	9	X
	<i>Sagittaria rigida</i>	Stiff arrowhead	8	I
	<i>Scirpus cyperinus</i>	Wool grass	4	I
	<i>Sagittaria latifolia</i>	Common arrowhead	3	X
	<i>Typha spp.</i>	Cattail spp.	1	I
	<i>Zizania palustris</i>	Northern wild rice	8	X
FL	<i>Brasenia schreberi</i>	Watershield	7	I
	<i>Nymphaea odorata</i>	White water lily	6	X
	<i>Nuphar variegata</i>	Spatterdock	6	X
FL/E	<i>Sparganium emersum</i>	Short-stemmed bur-reed	8	I
	<i>Sparganium fluctuans</i>	Floating-leaf bur-reed	10	X
Submergent	<i>Ceratophyllum demersum</i>	Coontail	3	X
	<i>Elodea canadensis</i>	Common waterweed	3	X
	<i>Megalodonta beckii</i>	Water marigold	8	X
	<i>Myriophyllum verticillatum</i>	Whorled water milfoil	8	X
	<i>Potamogeton praelongus</i>	White-stem pondweed	8	X
	<i>Potamogeton epiphydrus</i>	Ribbon-leaf pondweed	8	X
	<i>Potamogeton gramineus</i>	Variable pondweed	7	X
	<i>Potamogeton zosteriformis</i>	Flat-stem pondweed	6	X
	<i>Potamogeton richardsonii</i>	Clasping-leaf pondweed	5	X
	<i>Potamogeton robbinsii</i>	Fern pondweed	8	X
	<i>Potamogeton natans</i>	Floating-leaf pondweed	5	X
	<i>Utricularia intermedia</i>	Flat-leaf bladderwort	9	I
	<i>Utricularia vulgaris</i>	Common bladderwort	7	X
	<i>Vallisneria americana</i>	Wild celery	6	X
S/E	<i>Sagittaria cuneata</i>	Arum-leaved arrowhead	7	X
	<i>Sagittaria graminea</i>	Grass-leaved arrowhead	9	X
FF	<i>Lemna trisulca</i>	Forked duckweed	6	X
	<i>Lemna turionifera</i>	Turion duckweed	2	X
	<i>Spirodela polyrhiza</i>	Greater duckweed	5	X

FL = Floating Leaf; FL/E = Floating Leaf and Emergent; S/E = Submergent and Emergent; FF = Free-Floating
X = Located on rake during point-intercept survey; I = Incidental Species

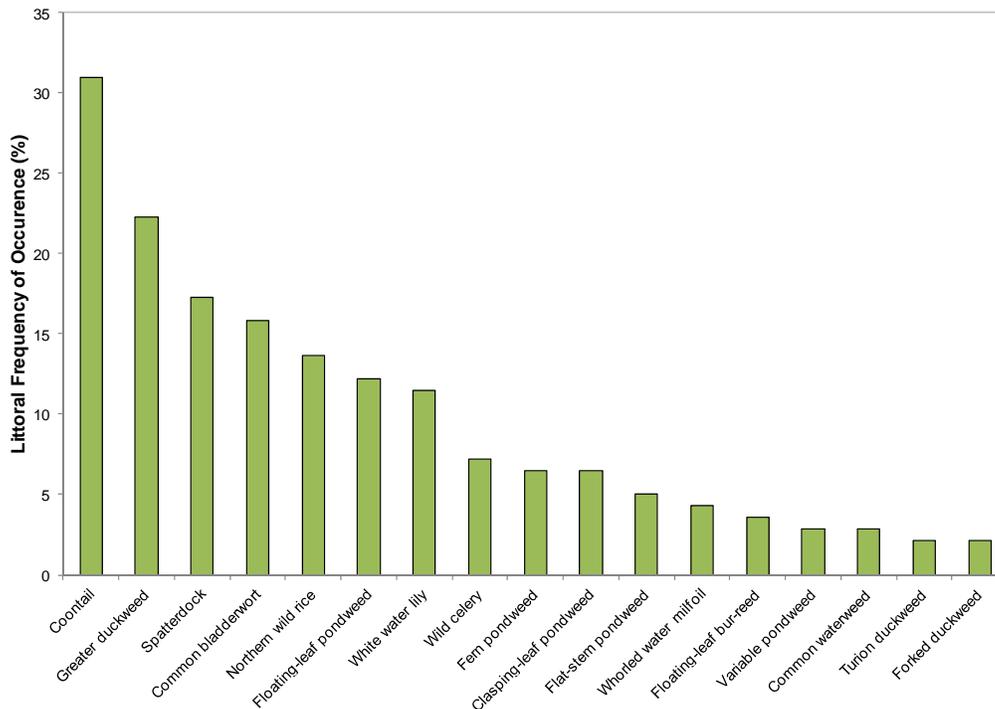


Figure 8.3.4-1 The Thoroughfare aquatic plant littoral frequency of occurrence analysis. Chart includes species with a frequency occurrence greater than 1.5% only. Created using data from a 2010 point-intercept survey.

Figure 8.3.4-1 (above) shows that coontail, greater duckweed, and spatterdock were the most frequently encountered plants within the Thoroughfare. Able to obtain the majority of its essential nutrients directly from the water, coontail does not produce extensive root systems, making them susceptible to uprooting by water-action and water movement. When this occurs, uprooted plants float and aggregate on the water's surface where they can continue to grow and form mats. Greater duckweed has round to oval-shaped leaf bodies called fronds that float individually or in groups on the water surface. This plant can be found worldwide in freshwater habitats that are protected from the wind where wave action is minimal. Interestingly, duckweed is largely made up of metabolically active cells with very little fiber; the tissue contains twice the protein, fat, nitrogen and phosphorus as other vascular plants. This makes the plant very high in nutritional value, and is a preferred food choice by waterfowl. Spatterdock is a rooted, floating-leaved plant with heart-shaped leaves and a bright yellow roundish flower in the summer months. This plant provides shade, cover from predators, and a source of food for several species of mammals such as waterfowl, muskrat, beaver, and deer.

Of the seven milfoil species (genus *Myriophyllum*) found in Wisconsin, only one was located within the Thoroughfare. Whorled water milfoil is a submerged milfoil plant with leaves in whorls of 4 to 5. The leaves have somewhat of a feathery appearance. It is often mistaken for other species of milfoil, such as northern water milfoil or the invasive Eurasian water milfoil. This plant is most readily distinguished from other milfoils by its overall size (whorled water milfoil is typically larger and more robust) and the length between leaf nodes, which is less than

other species of milfoil (about 1 cm apart). Additionally, leaflet counts are helpful in identification – whorled water milfoil typically has 9-13 leaflet segments on each side of the midrib of the leaflet, while northern water milfoil has 5-10 and Eurasian water milfoil 12-24 leaflets.

35 species of aquatic plants (including incidentals) were found in the Thoroughfare and because of this, one may assume that the system would also have a high diversity. As discussed earlier, how evenly the species are distributed throughout the system also influence the diversity. The diversity index for the Thoroughfare's plant community (0.91) lies above the Northern Lakes and Forests Lakes ecoregion value (0.86), indicating the lake holds exceptional diversity.

As explained earlier in the Primer on Data Analysis and Data Interpretation Section, the littoral frequency of occurrence analysis allows for an understanding of how often each of the plants is located during the point-intercept survey. Because each sampling location may contain numerous plant species, relative frequency of occurrence is one tool to evaluate how often each plant species is found in relation to all other species found (composition of population). For instance, while coontail was found at 31% of the sampling locations, its relative frequency of occurrence is 18%. Explained another way, if 100 plants were randomly sampled from the Thoroughfare, 18 of them would be coontail. This distribution can be observed in Figure 8.3.4-2, where together 7 species account for 71% of the population of plants within the Thoroughfare and the other 18 species account for the remaining 29%. Ten additional species were located from the lake but not from of the point-intercept survey, and are indicated in Table 8.3.4-1 as incidentals.

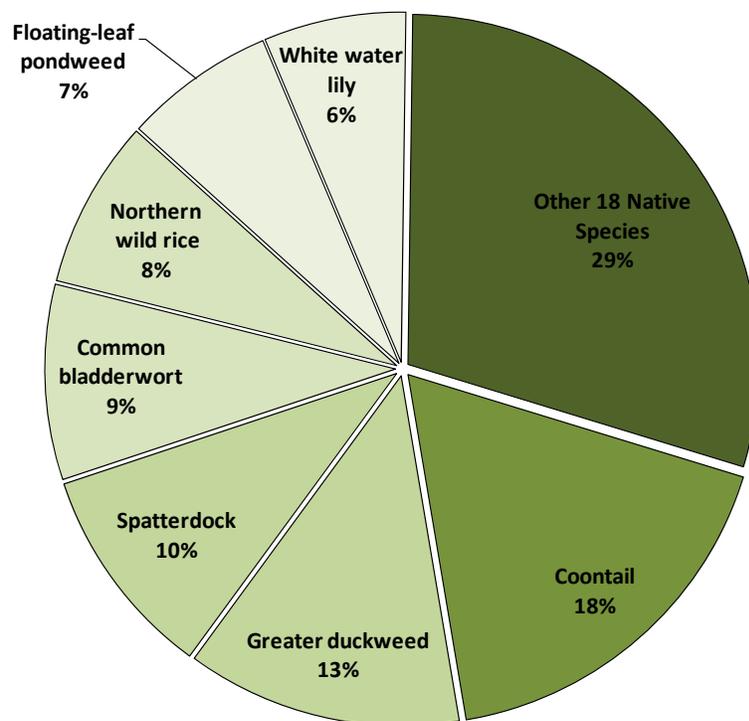


Figure 8.3.4-2 The Thoroughfare aquatic plant relative frequency of occurrence analysis. Created using data from 2010 point-intercept survey.

The Thoroughfare's average conservatism value (6.9) is higher than both the state (6.0) and ecoregion (6.7) median. This indicates that the plant community of the Thoroughfare is indicative of an undisturbed system. This is not surprising considering the Thoroughfare's plant community has great diversity and high species richness. Combining the Thoroughfare's species richness and average conservatism values to produce its Floristic Quality Index (FQI) results in an exceptionally high value of 34.6 which is well above the median values of the ecoregion and state.

The quality of the Thoroughfare is also indicated by the high incidence of emergent and floating-leaf plant communities that occur in many areas. The 2010 community map indicates that approximately 162.9 acres of the lake contains these types of plant communities (The Thoroughfare Map 2, Table 8.3.4-2). Ten floating-leaf and emergent species were located on the Thoroughfare (Table 8.3.4-1), all of which provide valuable wildlife habitat.

Table 8.3.4-2. The Thoroughfare acres of emergent and floating-leaf plant communities from the 2010 community mapping survey.

Plant Community	Acres
Emergent	0
Floating-leaf	0
Mixed Floating-leaf and Emergent	162.9
Total	162.9

The community map represents a 'snapshot' of the emergent and floating-leaf plant communities, replications of this survey through time will provide a valuable understanding of the dynamics of these communities within the Thoroughfare. This is important, because these communities are often negatively affected by recreational use and shoreland development. Radomski and Goeman (2001) found a 66% reduction in vegetation coverage on developed shorelines when compared to undeveloped shorelines in Minnesota Lakes. Furthermore, they also lost a significant reduction in abundance and size of northern pike (*Esox lucius*), bluegill (*Lepomis macrochirus*), and pumpkinseed (*Lepomis gibbosus*) associated with these developed shorelines.