Beauregard Lake Critical Habitat Designation Report

Douglas County, WI

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Critical Habitat Designation Program – Introduction

Wisconsites are concerned about the growing number of threats to sustainable healthy lakes in the state. Increases in shoreline development are changing lake ecosystems, and the conversion of natural lakeshore to residential development has greatly accelerated over the past 30 years. While many positive measures have been initiated within Wisconsin over the past few decades, habitat and water quality continue to be impacted.

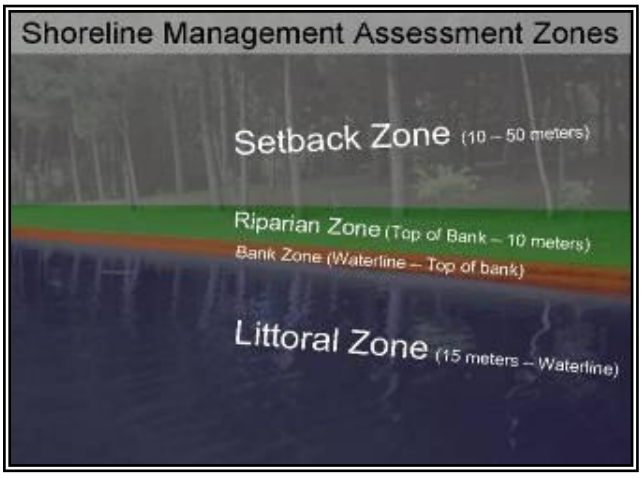
Critical Habitat Designation is a program that includes formal designations of areas considered important to fish and wildlife. Critical Habitat is classified into three categories: sensitive areas, public rights features, and resource protection areas (uplands within the shoreline zone). These three elements combine to provide regulatory and management advice to the State of Wisconsin, counties, local units of governments, and others who are interested in protecting and preserving these unique habitats for future generations. Designation of Critical Habitat aims to serve four primary purposes:

1) Resource protection through science based regulatory review.
2) Community-based resource protection through community education, planning and zoning.
3) As a guide to land-trusts and others acquiring land and conservation easements.
4) A mechanism to track long-term changes in these habitats.

Methods

Critical Habitat Designation occurred on Shunenberg Lake in Bayfield County during 2007 and 2008. Shunenberg Lake, which is a 44 acre lake with a max depth of 6 feet, is part of the Eau Claire Chain of Lakes and is located between Sweet Lake and Smith Lake. Access to Shunenberg Lake is through navigable water from both Sweet Lake and Smith Lake via the public boat launch on Upper Eau Claire Lake.

Figure 1. Shoreline Management Zones



Designations were conducted by a team consisting of the county fisheries biologist, water resources specialist, wildlife biologist, and critical habitat coordinator. Initially, DNR staff compiled and reviewed existing natural resource data that helped identify areas of focus related to fish, wildlife, endangered resources, and their habitats before going into the field. In the field, staff used existing natural resource data, delineation guidance, and professional judgment to establish the boundaries of the sites containing critical habitat. Critical Habitat Designation boundaries were recorded in the field using map grade Trimble Geo XM GPS Units. For each site, staff inventoried current shoreline management practices occurring along littoral, bank, riparian, and setback zones following standardized methods. Depending on the features of each area being delineated, standardized sampling of emergent and submergent aquatic vegetation, substrate, and woody habitat was also conducted.

Note: A detailed description of the Critical Habitat Designation program, associated methods, and the values of Critical Habitat can be found at http://dnr.wi.gov/lakes/criticalhabitat/. Detailed

assessments of each Critical Habitat area including raw sampling data and GIS shape files are available by contacting your local DNR office.

Management Recommendations

General Lakewide Recommendations: most of these actions will be good for the lake regardless if the site is within a designated critical habitat area or not. Emphasis of or exceptions to these general recommendations are discussed in more detail in the specific site management recommendations. For example, planting native vegetation along shorelines will generally be beneficial to the lake and property owner. Shorelines that are dominated by established lawn, however, may be out of compliance with current zoning standards and higher priority for restoration since those areas tend to pollute the resource more while simultaneously being devoid of natural fish and wildlife habitat.

Permanent Land Protection
Permanently protect designated critical habitat areas. Permanent land protection tools include: land acquisition, conservation easements, and mutual covenants. Competitive funding opportunities exist for parcels that are large and of particular conservation value. Voluntary protection or private funding sources may be the primary protection methods for smaller parcels. Specific lakewide and site recommendations emphasize priority areas for permanent land protection.

Shoreland Restoration
Leave natural shorelines undisturbed in accordance with local shoreland zoning rules. If the shoreline buffer does not exist or is disturbed, it should be replanted with native vegetation. The Douglas County Land & Water Conservation Department may provide shoreline restoration technical and funding assistance. Additionally, the Wisconsin Department of Natural Resources offers competitive shoreline restoration grants. Some local landscaping businesses may be able to assist landowners with site planning, including native plant selection.

Runoff Control
Implement lake and river water quality protection tools like rainwater gardens, rain barrels, infiltration pits and trenches, grass swales, etc. that divert and/or infiltrate water before it enters the lake or river. Similar to shoreland restoration, the Douglas County Land & Water Conservation Department may provide technical and funding assistance for these practices. Additionally, the Wisconsin Department of Natural Resources offers competitive lake protection grants. Some local landscaping businesses may be able to assist landowners with site planning, including plant selection.

Septic Systems
Inspect and maintain septic systems to prevent excess nutrient addition while protecting present water quality conditions. Ideally, the public sanitary sewer system will include the entire lake shoreline and watershed drainage area. Septic systems are not designed to remove the nutrients (i.e., phosphorous and nitrogen) that pollute water resources. Furthermore, septic water quickly moves through the local sandy soils and speeds delivery of potentially polluted water to the lake or river.

In-Lake Habitat Protection
Consider local recreational boating ordinances (i.e., slow-no-wake) within designated critical habitat areas. Specific lakewide and site recommendations emphasize priority areas for these ordinances.

In general, native aquatic plants should not be actively managed (i.e., no raking, herbicide use, or mechanized removal) and, if within a designated critical habitat site, will require a permit for manual removal as well as chemical control. Lakewide and site specific recommendations describe exceptions to this general recommendation.

Near shore trees that fall into the water should be left in the water. Site specific recommendations discuss ideal locations for replacing lost woody habitat. There are opportunities with the DNR and Douglas County Land & Water Conservation Department to implement a Fish Sticks project that replaces this valuable habitat.

Specific Site Recommendations: these management actions are specific to the given site and only supersede general and specific lakewide recommendations if explicitly stated.

Sites

Eleven areas were designated as Critical Habitat on Beauregard Lake for a total of 32.2 acres (Figure 2; Tables 1 and 2). Ten areas were designated as Sensitive Areas for rushes, emergent and floating leaf aquatic plants, and/or submergent aquatic plants. One area was designated as a Public Rights Feature for spawning substrate.

Figure 2. Beauregard Lake Critical Habitat Map

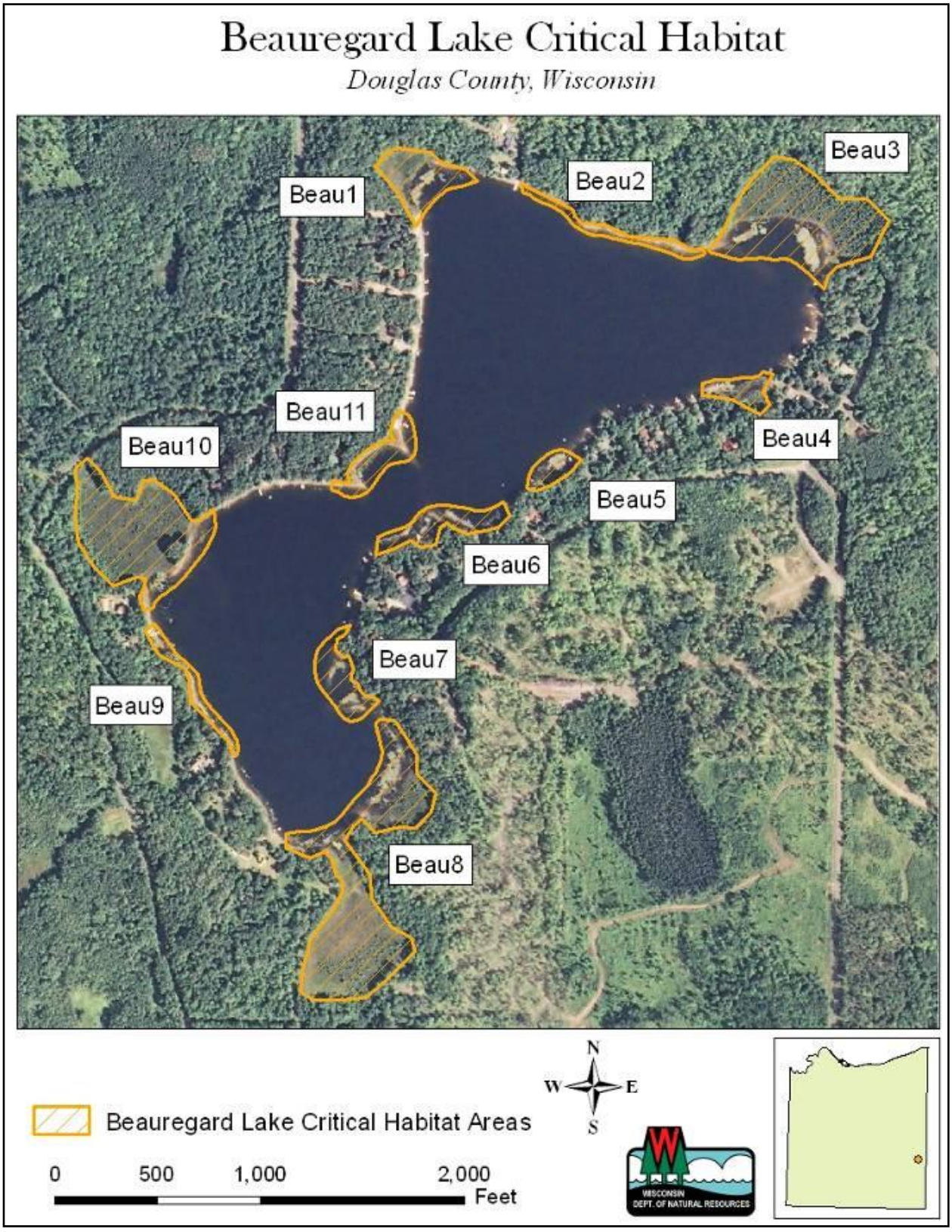
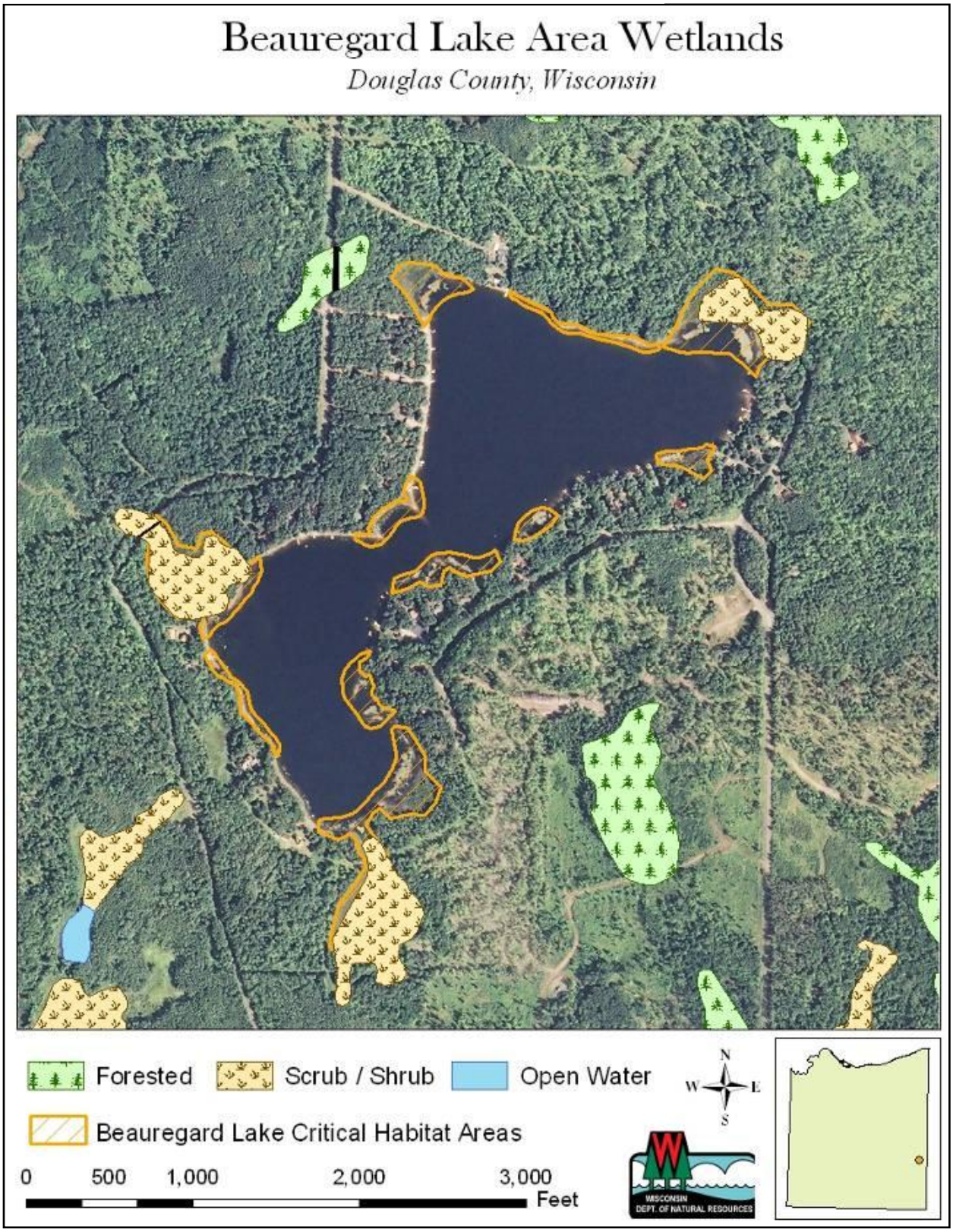


Table 1. Beauregard Lake Critical Habitat Polygon Justifications				
Critical Habitat Polygon ID	Acres	Justification	Justification	Classification
Beau1	2.0	3	6	Sensitive Area
Beau2	0.9	8	4	Sensitive Area
Beau3	6.9	6	3	Sensitive Area
Beau4	0.8	3	6	Sensitive Area
Beau5	0.7	3	-	Sensitive Area
Beau6	1.6	3	-	Sensitive Area
Beau7	1.6	8	3	Sensitive Area
Beau8	9.0	3	6	Sensitive Area
Beau9	0.9	8	-	Public Rights Feature
Beau10	6.4	6	3	Sensitive Area
Beau11	1.5	4	3	Sensitive Area

Table 2. Critical Habitat Justification Descriptions		
Justifications	Justification Feature	Classification
1	Bio-diverse Submerged Aquatic Vegetation (SAV)	Sensitive Area
2	SAV Important to Fish and Wildlife Habitat	Sensitive Area
3	Emergent and Floating Leaf Vegetation	Sensitive Area
4	Rush Beds	Sensitive Area
5	Wild Rice Bed	Sensitive Area
6	Extensive Riparian Wetland	Sensitive Area
7	Woody Habitat	Public Rights Feature
8	Spawning Substrate	Public Rights Feature
9	Water Quality (springs, etc)	Public Rights Feature
10	Natural Scenic Beauty	Public Rights Feature
11	Navigational Thoroughfare	Public Rights Feature

Figure 3. Beauregard Lake Area Wetlands Map



Beauregard Lake Critical Habitat Site Beau1

Critical habitat site Beau1 was designated a Sensitive Area because of its Emergent and Floating Leaf Vegetation and Extensive Riparian Wetland (Figure 4). Beau1 is 2.0 acres in size and is located in the Northwest bay near the public boat launch.

Aquatic Plants were sampled using a standardized Point Intercept method and a summary of the results can be found in Tables 3 and 4. Table 5 summarizes the current management practices within the Setback, Riparian, Bank, and Littoral Zones of Beau1.

Table 3. Beau1 Aquatic Plants

Scientific Name	Common Name	Plant Type	FQI Coefficient	Relative Frequency
Brasenia schreberi	Watershield	Floating Leaf	7	54.5
Nymphaea odorata	White water lily	Floating Leaf	6	9.1
Sparganium fluctuans	Floating-leaf-bur-reed	Floating Leaf	10	Visual
Eleocharis acicularis	Needle spikerush	Submergent	5	18.2
Myriophyllum tenellum	Dwarf water-milfoil	Submergent	10	9.1
Potamogeton epihydrus	Ribbon-leaf pondweed	Submergent	8	9.1

Table 4. Beau1 Aquatic Plant Sampling Summary Statistics

SUMMARY STATISTICS	Beau1
Total number of points sampled	18
Total number of sites with vegetation	8
Total number of sites shallower than maximum depth of plants	17
Frequency of occurrence at sites shallower than maximum depth of plants	47.06
Simpson Diversity Index	0.64
Maximum depth of plants (ft)	7.00
Number of sites sampled using rake on Rope (R)	0
Number of sites sampled using rake on Pole (P)	0
Average number of all species per site (shallower than max depth)	0.65
Average number of all species per site (veg. sites only)	1.38
Average number of native species per site (shallower than max depth)	0.65
Average number of native species per site (veg. sites only)	1.38
Species Richness	5
Species Richness (including visuals)	6
Floristic Quality Index (FQI)	18.78

Figure 4. Beau1 Aquatic Plant Diversity

Table 5. Shoreline Assessment of Beau1				
Feature	**Number**	**Density** (per mile)	**Shoreline Length** (feet)	**% of Shoreline**
Setback Zone				
Homes	0	0		
Accessory Structures	0	0		
Commercial Buildings	0	0		
Riparian Zone				
Homes	0	0		
Accessory Structures	0	0		
Commercial Buildings	0	0		
Natural vegetation			623	100
Shrub Layer Removed			0	0
Shrub & Ground Cover Removed			0	0
Established Lawn			0	0
Pastureland			0	0
Row Crop			0	0
Beach			0	0
Impervious Surface (road, parking lots, etc.)			0	0
Other			0	0
Not Visible			0	0
Total Shoreline			623	100
Bank Zone				
Natural Bank			623	100
Soft bioengineering			0	0
Hard bioengineering			0	0
Riprap			0	0
Pea Gravel Blanket			0	0
Established Lawn			0	0
Artificial Beach			0	0
Seawalls			0	0
Total Shoreline			623	100
Boat Ramp	0	0		
Stormwater Outflow	0	0		
Littoral Zone				
Piers	0	0		
Boat Lifts	0	0		
Swims Rafts/ Trampolines	0	0		
Boathouses	0	0		
Mooring Buoys	0	0		
Dredge channels	0	0		
Commercial Marinas	0	0		
Bridges	0	0		
Plant removal devices	0	0		
Recreational/Public Beaches	0	0		

Management Recommendations

Buffers and overhanging vegetation, bog fringe and floating, emergent and submersed aquatic plants should be left alone. Do not actively manage aquatic plants unless an aquatic invasive species should establish.

Leave fallen trees in the water unless they are impeding navigation. Implement Fish Sticks project. Contact local DNR Fisheries Biologist to investigate funding and technical assistance opportunities.

Beauregard Lake Critical Habitat Site Beau2

Critical habitat site Beau2 was designated a Public Rights Feature because of its Spawning Substrate (Figure 5). Beau2 is 0.9 acres in size and is located along the Northern shore of Beauregard Lake.

Spawning substrate was sampled using a standardized transect method and the results can be found in Table 6. Table 7 summarizes the current management practices within the Setback, Riparian, Bank and Littoral Zones of Beau2.

Table 6. Beau2 Spawning Substrate Sampling Transect Data

Transect Number	Quadrat Number	Band Start	Band End	Band Width (m)	Depth at Quadrat (cm)	Embeddedness	Marl	Detritus	Clay	Silt	Sand	Fine Gravel	Coarse Gravel	Cobble / Rubble	Small Boulder	Large Boulder	Bedrock
1	1	0	12	12	46						100						
1	2	4	13	9	63			10		30	60						
2	1	0	4	4	5	3					20	5	5	70			
3	1	0	14	14	50						100						
4	1	0	6	6	15	5					5	5	10	80			
4	2	6	12.5	6.5	72	1				20	10	10	60				
5	1	0	5.6	5.6	14	3				5		45	40	10			
5	2	5.6	15	9.4	47	1				30	60		10				
6	1	0	2.5	2.5	2	1					80	10	10				
6	2	2.5	7.4	4.9	31	3				10	30			60			
6	3	7.4	14.2	6.8	76	1				20	30		50				
7	1	0	4.4	4.4	15	3					15		10	75			
7	2	4.4	13.3	8.9	60	1				10	20	10	50	10			
8	1	0	4.3	4.3	11	4					20	10	50	20			
8	2	4.3	15	10.7	69	1				20	60		10	10			
9	1	0	15	15	43	1				10	80		5	5			
10	1	0	3	3	9	4					10	10	20	60			
10	2	3	15	12	59					10	90						

Figure 5. Beau2 Spawning Substrate Transects Map

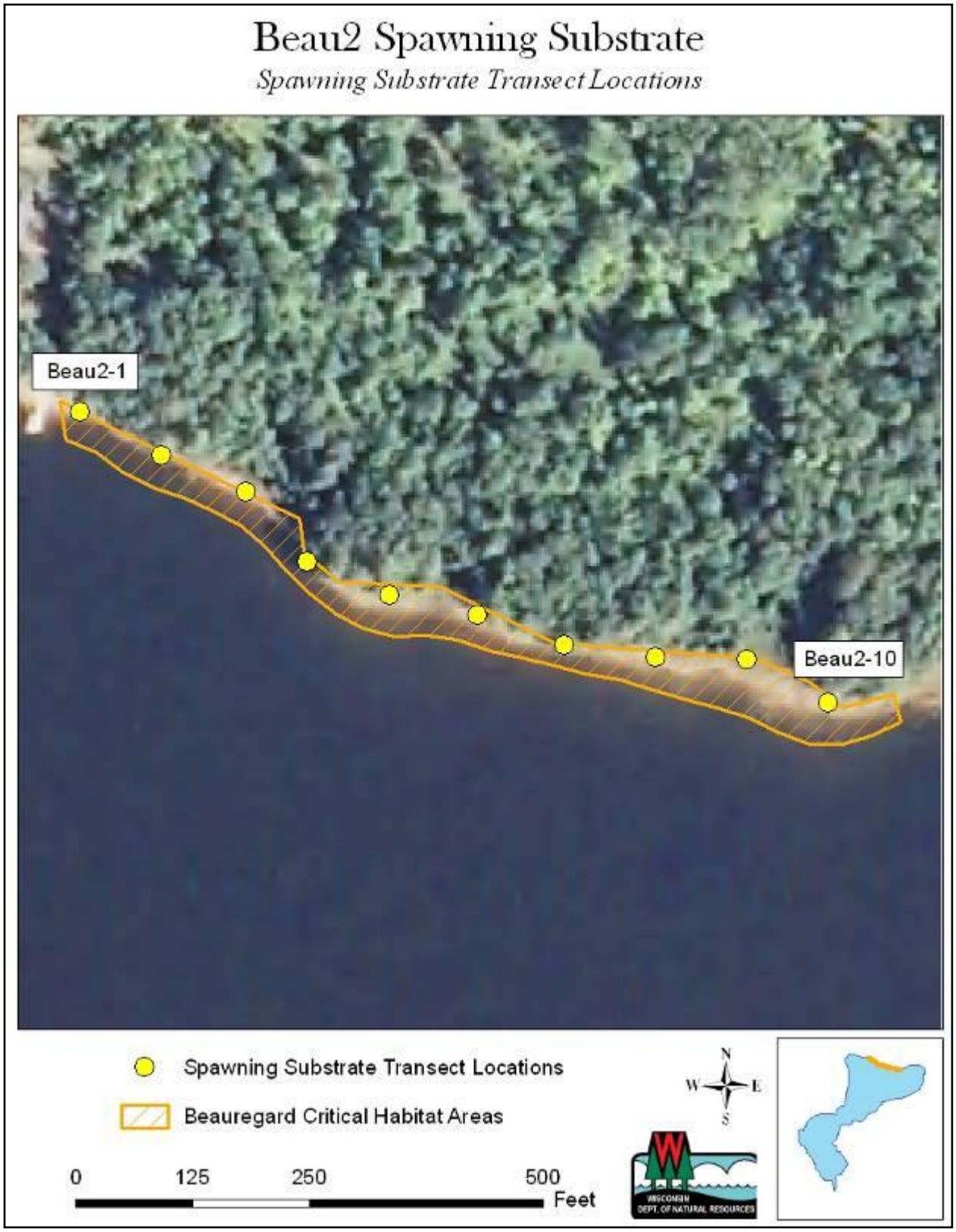


Table 7. Shoreline Assessment of Beau2				
Feature	**Number**	**Density** (per mile)	**Shoreline Length** (feet)	**% of Shoreline**
Setback Zone				
Homes	0	0		
Accessory Structures	0	0		
Commercial Buildings	0	0		
Riparian Zone				
Homes	0	0		
Accessory Structures	0	0		
Commercial Buildings	0	0		
Natural vegetation			984	100
Shrub Layer Removed			0	0
Shrub & Ground Cover Removed			0	0
Established Lawn			0	0
Pastureland			0	0
Row Crop			0	0
Beach			0	0
Impervious Surface (road, parking lots, etc.)			0	0
Other			0	0
Not Visible			0	0
Total Shoreline			984	100
Bank Zone				
Natural Bank			984	100
Soft bioengineering			0	0
Hard bioengineering			0	0
Riprap			0	0
Pea Gravel Blanket			0	0
Established Lawn			0	0
Artificial Beach			0	0
Seawalls			0	0
Total Shoreline			984	100
Boat Ramp	0	0		
Stormwater Outflow	0	0		
Littoral Zone				
Piers	0	0		
Boat Lifts	0	0		
Swims Rafts/ Trampolines	0	0		
Boathouses	0	0		
Mooring Buoys	0	0		
Dredge channels	0	0		
Commercial Marinas	0	0		
Bridges	0	0		
Plant removal devices	0	0		
Recreational/Public Beaches	0	0		

Management Recommendations

Buffers, overhanging vegetation and fallen trees should remain to provide cover and prevent shoreline erosion which could cause undesirable increases in sedimentation on this valuable walleye spawning shoal, consisting of an abundance of cobble, gravel and sand.

Implement Fish Sticks project. Contact local DNR Fisheries Biologist to investigate funding and technical assistance opportunities.

Beauregard Lake Critical Habitat Site Beau3

Critical habitat site Beau3 was designated a Sensitive Area because of its Extensive Riparian Wetland and Emergent and Floating Leaf Vegetation (Figure 6). Beau3 is 6.9 acres in size and is located in the Northeast bay of Beauregard Lake.

Aquatic Plants were sampled using a standardized Point Intercept method and a summary of the results can be found in Tables 8 and 9. Table 10 summarizes the current management practices within the Setback, Riparian, Bank and Littoral Zones of Beau3.

Table 8. Beau3 Aquatic Plants

Scientific Name	Common Name	Plant Type	FQI Coefficient	Relative Frequency
Sagittaria sp	Arrowhead	Emergent	-	8.7
Sparganium angustifolium	Narrow-leaved bur-reed	Emergent	9	4.3
Brasenia schreberi	Watershield	Floating Leaf	7	26.1
Nymphaea odorata	White water lily	Floating Leaf	6	4.3
Sparganium fluctuans	Floating-leaf-bur-reed	Floating Leaf	10	4.3
Utricularia vulgaris	Common bladderwort	Free Floating	7	4.3
Chara	Muskgrasses	Submergent	7	4.3
Eleocharis acicularis	Needle spikerush	Submergent	5	21.7
Myriophyllum tenellum	Dwarf water-milfoil	Submergent	10	17.4
Ranunculus flammula	Creeping spearwort	Submergent	9	4.3

Table 9. Beau3 Aquatic Plant Sampling Summary Statistics

SUMMARY STATISTICS	Beau3
Total number of points sampled	19
Total number of sites with vegetation	13
Total number of sites shallower than maximum depth of plants	18
Frequency of occurrence at sites shallower than maximum depth of plants	72.22
Simpson Diversity Index	0.84
Maximum depth of plants (ft)	5.00
Number of sites sampled using rake on Rope (R)	0
Number of sites sampled using rake on Pole (P)	0
Average number of all species per site (shallower than max depth)	1.28
Average number of all species per site (veg. sites only)	1.77
Average number of native species per site (shallower than max depth)	1.28
Average number of native species per site (veg. sites only)	1.77
Species Richness	10
Species Richness (including visuals)	10
Floristic Quality Index (FQI)	23.33

Figure 6. Beau3 Aquatic Plant Diversity Map

Table 10. Shoreline Assessment of Beau3				
Feature	**Number**	**Density** (per mile)	**Shoreline Length** (feet)	**% of Shoreline**
Setback Zone				
Homes	1	5.6		
Accessory Structures	0	0		
Commercial Buildings	0	0		
Riparian Zone				
Homes	0	0		
Accessory Structures	2	11.1		
Commercial Buildings	0	0		
Natural vegetation			885	93.1
Shrub Layer Removed			0	0
Shrub & Ground Cover Removed			0	0
Established Lawn			66	6.9
Pastureland			0	0
Row Crop			0	0
Beach			0	0
Impervious Surface (road, parking lots, etc.)			0	0
Other			0	0
Not Visible			0	0
Total Shoreline			951	100
Bank Zone				
Natural Bank			885	93.1
Soft bioengineering			0	0
Hard bioengineering			0	0
Riprap			0	0
Pea Gravel Blanket			0	0
Established Lawn			66	6.9
Artificial Beach			0	0
Seawalls			0	0
Total Shoreline			951	100
Boat Ramp	0	0		
Stormwater Outflow	0	0		
Littoral Zone				
Piers	0	0		
Boat Lifts	0	0		
Swims Rafts/ Trampolines	0	0		
Boathouses	0	0		
Mooring Buoys	0	0		
Dredge channels	0	0		
Commercial Marinas	0	0		
Bridges	0	0		
Plant removal devices	0	0		
Recreational/Public Beaches	0	0		

Management Recommendations

Buffers and overhanging vegetation, bog fringe and floating, emergent and submersed aquatic plants should be left alone. Do not actively manage aquatic plants unless an aquatic invasive species should establish.

The small amount of established lawn within 50 feet of the water's edge should be replanted with native vegetation to comply with Douglas County shoreland zoning ordinance, minimize erosion and pollution, and improve fish and wildlife habitat.

Leave fallen trees in the water unless they are impeding navigation. Implement Fish Sticks project. Contact local DNR Fisheries Biologist to investigate funding and technical assistance opportunities.

Beauregard Lake Critical Habitat Site Beau4

Critical habitat site Beau4 was designated a Sensitive Area because of its Emergent and Floating Leaf Vegetation and Extensive Riparian Wetland (Figure 7). Beau4 is 0.8 acres in size and is located along the Eastern shore of Beauregard Lake.

Aquatic Plants were sampled using a standardized Point Intercept method and a summary of the results can be found in Tables 11 and 12. Table 13 summarizes the current management practices within the Setback, Riparian, Bank and Littoral Zones of Beau4.

Table 11. Beau4 Aquatic Plants

Scientific Name	Common Name	Plant Type	FQI Coefficient	Relative Frequency
Sagittaria sp	Arrowhead	Emergent	-	28.6
Brasenia schreberi	Watershield	Floating Leaf	7	37.5
Nymphaea odorata	White water lily	Floating Leaf	6	21.4
Chara	Muskgrasses	Submergent	7	7.1
Eleocharis acicularis	Needle spikerush	Submergent	5	7.1

Table 12. Beau4 Aquatic Plant Sampling Summary Statistics

SUMMARY STATISTICS	Beau4
Total number of points sampled	9
Total number of sites with vegetation	7
Total number of sites shallower than maximum depth of plants	9
Frequency of occurrence at sites shallower than maximum depth of plants	77.78
Simpson Diversity Index	0.73
Maximum depth of plants (ft)	5.00
Number of sites sampled using rake on Rope (R)	0
Number of sites sampled using rake on Pole (P)	0
Average number of all species per site (shallower than max depth)	1.56
Average number of all species per site (veg. sites only)	2.00
Average number of native species per site (shallower than max depth)	1.56
Average number of native species per site (veg. sites only)	2.00
Species Richness	5
Species Richness (including visuals)	5
Floristic Quality Index (FQI)	12.50

Figure 7. Beau4 Aquatic Plant Diversity Map

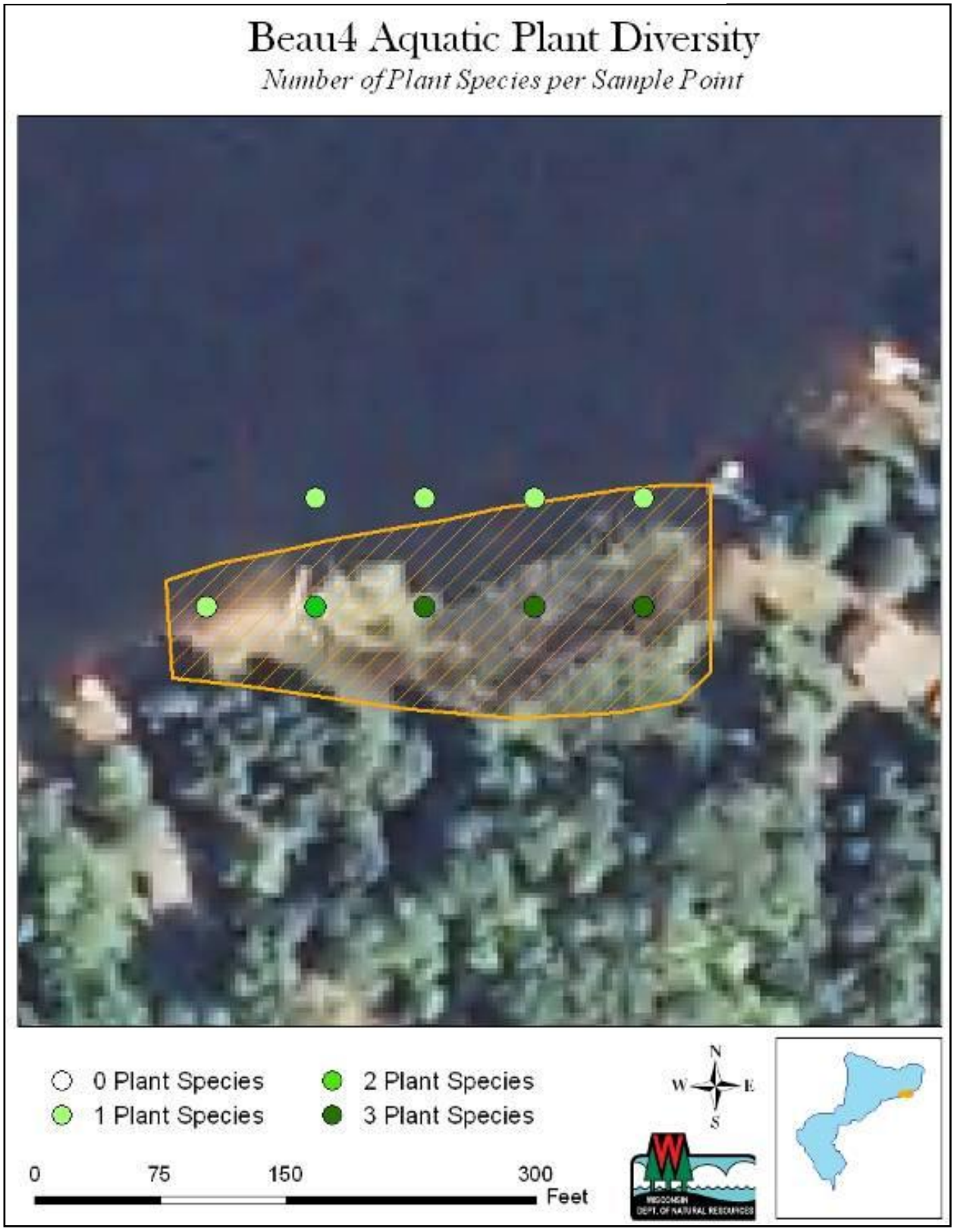


Table 13. Shoreline Assessment of Beau4				
Feature	**Number**	**Density** (per mile)	**Shoreline Length** (feet)	**% of Shoreline**
Setback Zone				
Homes	3	48.3		
Accessory Structures	2	32.2		
Commercial Buildings	0	0		
Riparian Zone				
Homes	0	0		
Accessory Structures	2	32.2		
Commercial Buildings	0	0		
Natural vegetation			312	95.1
Shrub Layer Removed			0	0
Shrub & Ground Cover Removed			0	0
Established Lawn			16	4.9
Pastureland			0	0
Row Crop			0	0
Beach			0	0
Impervious Surface (road, parking lots, etc.)			0	0
Other			0	0
Not Visible			0	0
Total Shoreline			328	100
Bank Zone				
Natural Bank			312	95.1
Soft bioengineering			0	0
Hard bioengineering			0	0
Riprap			0	0
Pea Gravel Blanket			0	0
Established Lawn			16	4.9
Artificial Beach			0	0
Seawalls			0	0
Total Shoreline			328	100
Boat Ramp	0	0		
Stormwater Outflow	0	0		
Littoral Zone				
Piers	1	16.1		
Boat Lifts	0	0		
Swims Rafts/ Trampolines	0	0		
Boathouses	0	0		
Mooring Buoys	0	0		
Dredge channels	0	0		
Commercial Marinas	0	0		
Bridges	0	0		
Plant removal devices	0	0		
Recreational/Public Beaches	0	0		

Management Recommendations

Buffers and overhanging vegetation, bog fringe and floating, emergent and submersed aquatic plants should be left alone. Do not actively manage aquatic plants unless an aquatic invasive species should establish.

The small amount of established lawn within 50 feet of the water's edge should be replanted with native vegetation to comply with Douglas County shoreland zoning ordinance, minimize erosion and pollution, and improve fish and wildlife habitat.

Leave fallen trees in the water unless they are impeding navigation. Implement Fish Sticks project. Contact local DNR Fisheries Biologist to investigate funding and technical assistance opportunities.

Beauregard Lake Critical Habitat Site Beau5

Critical habitat site Beau5 was designated a Sensitive Area because of its Emergent and Floating Leaf Vegetation (Figure 8). Beau5 is 0.6 acres in size and is located along the Eastern shore of Beauregard Lake.

Aquatic Plants were sampled using a standardized Point Intercept method and a summary of the results can be found in Tables 14 and 15. Table 16 summarizes the current management practices within the Setback, Riparian, Bank and Littoral Zones of Beau5.

Table 14. Beau5 Aquatic Plants

Scientific Name	Common Name	Plant Type	FQI Coefficient	Relative Frequency
Chara	Muskgrasses	Submergent	7	16.7
Elatine minima	Waterwort	Submergent	9	16.7
Eleocharis acicularis	Needle spikerush	Submergent	5	33.3
Myriophyllum tenellum	Dwarf water-milfoil	Submergent	10	16.7
Ranunculus flammula	Creeping spearwort	Submergent	9	16.7

Table 15. Beau5 Aquatic Plant Sampling Summary Statistics

SUMMARY STATISTICS	Beau5
Total number of points sampled	4
Total number of sites with vegetation	4
Total number of sites shallower than maximum depth of plants	4
Frequency of occurrence at sites shallower than maximum depth of plants	100.00
Simpson Diversity Index	0.78
Maximum depth of plants (ft)	5.00
Number of sites sampled using rake on Rope (R)	0
Number of sites sampled using rake on Pole (P)	0
Average number of all species per site (shallower than max depth)	1.50
Average number of all species per site (veg. sites only)	1.50
Average number of native species per site (shallower than max depth)	1.50
Average number of native species per site (veg. sites only)	1.50
Species Richness	5
Species Richness (including visuals)	5
Floristic Quality Index (FQI)	17.89

Figure 8. Beau5 Aquatic Plant Diversity Map

Table 16. Shoreline Assessment of Beau5				
Feature	**Number**	**Density** (per mile)	**Shoreline Length** (feet)	**% of Shoreline**
Setback Zone				
Homes	0	0		
Accessory Structures	1	21.5		
Commercial Buildings	0	0		
Riparian Zone				
Homes	0	0		
Accessory Structures	0	0		
Commercial Buildings	0	0		
Natural vegetation			115	46.7
Shrub Layer Removed			0	0
Shrub & Ground Cover Removed			131	53.3
Established Lawn			0	0
Pastureland			0	0
Row Crop			0	0
Beach			0	0
Impervious Surface (road, parking lots, etc.)			0	0
Other			0	0
Not Visible			0	0
Total Shoreline			246	100
Bank Zone				
Natural Bank			246	100
Soft bioengineering			0	0
Hard bioengineering			0	0
Riprap			0	0
Pea Gravel Blanket			0	0
Established Lawn			0	0
Artificial Beach			0	0
Seawalls			0	0
Total Shoreline			246	100
Boat Ramp	0	0		
Stormwater Outflow	0	0		
Littoral Zone				
Piers	1	21.5		
Boat Lifts	0	0		
Swims Rafts/ Trampolines	1	21.5		
Boathouses	0	0		
Mooring Buoys	0	0		
Dredge channels	0	0		
Commercial Marinas	0	0		
Bridges	0	0		
Plant removal devices	0	0		
Recreational/Public Beaches	0	0		

Management Recommendations

Buffers and overhanging vegetation, bog fringe and floating, emergent and submersed aquatic plants should be left alone. Do not actively manage aquatic plants unless an aquatic invasive species should establish.

Leave fallen trees in the water unless they are impeding navigation. Implement Fish Sticks project. Contact local DNR Fisheries Biologist to investigate funding and technical assistance opportunities.

Beauregard Lake Critical Habitat Site Beau6

Critical habitat site Beau6 was designated a Sensitive Area because of its Emergent and Floating Leaf Vegetation (Figure 9). Beau6 is 1.8 acres in size and is located along the east shore of the lake.

Aquatic Plants were sampled using a standardized Point Intercept method and a summary of the results can be found in Tables 17 and 18. Table 19 summarizes the current management practices within the Setback, Riparian, Bank and Littoral Zones of Beau6.

Table 17. Beau6 Aquatic Plants

Scientific Name	Common Name	Plant Type	FQI Coefficient	Relative Frequency
Sagittaria sp	Arrowhead	Emergent	-	11.1
Sparganium angustifolium	Narrow-leaved bur-reed	Emergent	9	Visual
Brasenia schreberi	Watershield	Floating Leaf	7	44.4
Eleocharis acicularis	Needle spikerush	Submergent	5	11.1
Myriophyllum tenellum	Dwarf water-milfoil	Submergent	10	11.1
Potamogeton bicupulatus	Snail-seed pondweed	Submergent	9	11.1
Potamogeton epihydrus	Ribbon-leaf pondweed	Submergent	8	11.1

Table 18. Beau6 Aquatic Plant Sampling Summary Statistics

SUMMARY STATISTICS	Beau6
Total number of points sampled	12
Total number of sites with vegetation	5
Total number of sites shallower than maximum depth of plants	12
Frequency of occurrence at sites shallower than maximum depth of plants	41.67
Simpson Diversity Index	0.74
Maximum depth of plants (ft)	7.50
Number of sites sampled using rake on Rope (R)	0
Number of sites sampled using rake on Pole (P)	0
Average number of all species per site (shallower than max depth)	0.75
Average number of all species per site (veg. sites only)	1.80
Average number of native species per site (shallower than max depth)	0.75
Average number of native species per site (veg. sites only)	1.80
Species Richness	6
Species Richness (including visuals)	7
Floristic Quality Index (FQI)	19.60

Figure 9. Beau6 Aquatic Plant Diversity Map

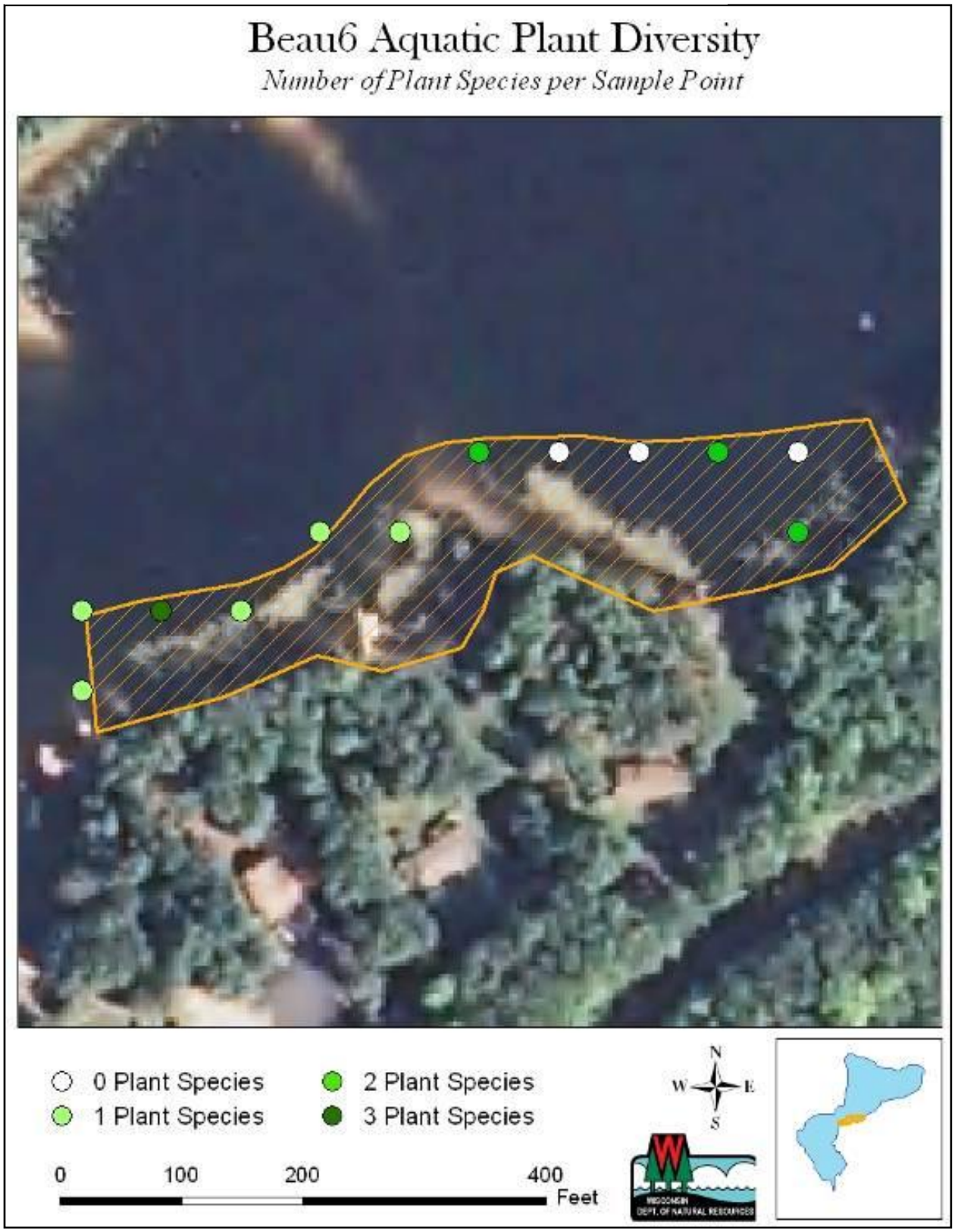


Table 19. Shoreline Assessment of Beau6				
Feature	**Number**	**Density** (per mile)	**Shoreline Length** (feet)	**% of Shoreline**
Setback Zone				
Homes	3	21.5		
Accessory Structures	5	35.8		
Commercial Buildings	0	0		
Riparian Zone				
Homes	0	0		
Accessory Structures	1	7.2		
Commercial Buildings	0	0		
Natural vegetation			0	0
Shrub Layer Removed			0	0
Shrub & Ground Cover Removed			0	0
Established Lawn			738	100
Pastureland			0	0
Row Crop			0	0
Beach			0	0
Impervious Surface (road, parking lots, etc.)			0	0
Other			0	0
Not Visible			0	0
Total Shoreline			738	100
Bank Zone				
Natural Bank			656	88.9
Soft bioengineering			0	0
Hard bioengineering			0	0
Riprap			16	2.2
Pea Gravel Blanket			0	0
Established Lawn			0	0
Artificial Beach			66	8.9
Seawalls			0	0
Total Shoreline			738	100
Boat Ramp	0	0		
Stormwater Outflow	0	0		
Littoral Zone				
Piers	1	7.2		
Boat Lifts	0	0		
Swims Rafts/ Trampolines	0	0		
Boathouses	0	0		
Mooring Buoys	0	0		
Dredge channels	0	0		
Commercial Marinas	0	0		
Bridges	0	0		
Plant removal devices	0	0		
Recreational/Public Beaches	0	0		

Management Recommendations

Buffers and overhanging vegetation, bog fringe and floating, emergent and submersed aquatic plants should be left alone. Do not actively manage aquatic plants unless an aquatic invasive species should establish.

Established lawn within 50 feet of the water's edge should be replanted with native vegetation to comply with Douglas County shoreland zoning ordinance, minimize erosion and pollution, and improve fish and wildlife habitat.

According to the shoreline inventory, there is some riprap in Beau6. The wave energy is moderate. Riprap should not be permitted, and alternative bank stabilization methods should be used instead if evidence of erosion develops.

Leave fallen trees in the water unless they are impeding navigation. Implement Fish Sticks project. Contact local DNR Fisheries Biologist to investigate funding and technical assistance opportunities.

Beauregard Lake Critical Habitat Site Beau7

Critical habitat site Beau7 was designated a Sensitive Area because of its Spawning Substrate and Emergent and Floating Leaf Vegetation (Figures 10 & 11). Beau7 is 1.9 acres in size and is located along the east shore on the south end of Beauregard Lake.

Aquatic Plants were sampled using a standardized Point Intercept method and a summary of the results can be found in Tables 20 and 21. Spawning substrate was sampled using a standardized transect method and the results can be seen in Table 22. Table 23 summarizes the current management practices within the Setback, Riparian, Bank and Littoral Zones of Beau7.

Table 20. Beau7 Aquatic Plants

Scientific Name	Common Name	Plant Type	FQI Coefficient	Relative Frequency
Sparganium angustifolium	Narrow-leaved bur-reed	Emergent	9	Visual
Brasenia schreberi	Watershield	Floating Leaf	7	36.4
Chara	Muskgrasses	Submergent	7	9.1
Eleocharis acicularis	Needle spikerush	Submergent	5	9.1
Myriophyllum tenellum	Dwarf water-milfoil	Submergent	10	9.1
Potamogeton bicupulatus	Snail-seed pondweed	Submergent	9	27.3
Ranunculus flammula	Creeping spearwort	Submergent	9	9.1

Table 21. Beau7 Aquatic Plant Sampling Summary Statistics

SUMMARY STATISTICS	Beau7
Total number of points sampled	19
Total number of sites with vegetation	9
Total number of sites shallower than maximum depth of plants	16
Frequency of occurrence at sites shallower than maximum depth of plants	56.25
Simpson Diversity Index	0.76
Maximum depth of plants (ft)	9.00
Number of sites sampled using rake on Rope (R)	0
Number of sites sampled using rake on Pole (P)	0
Average number of all species per site (shallower than max depth)	0.69
Average number of all species per site (veg. sites only)	1.22
Average number of native species per site (shallower than max depth)	0.69
Average number of native species per site (veg. sites only)	1.22
Species Richness	6
Species Richness (including visuals)	7
Floristic Quality Index (FQI)	21.17

Figure 10. Beau7 Aquatic Plant Diversity Map

Figure 11. Beau7 Spawning Substrate Transects Map

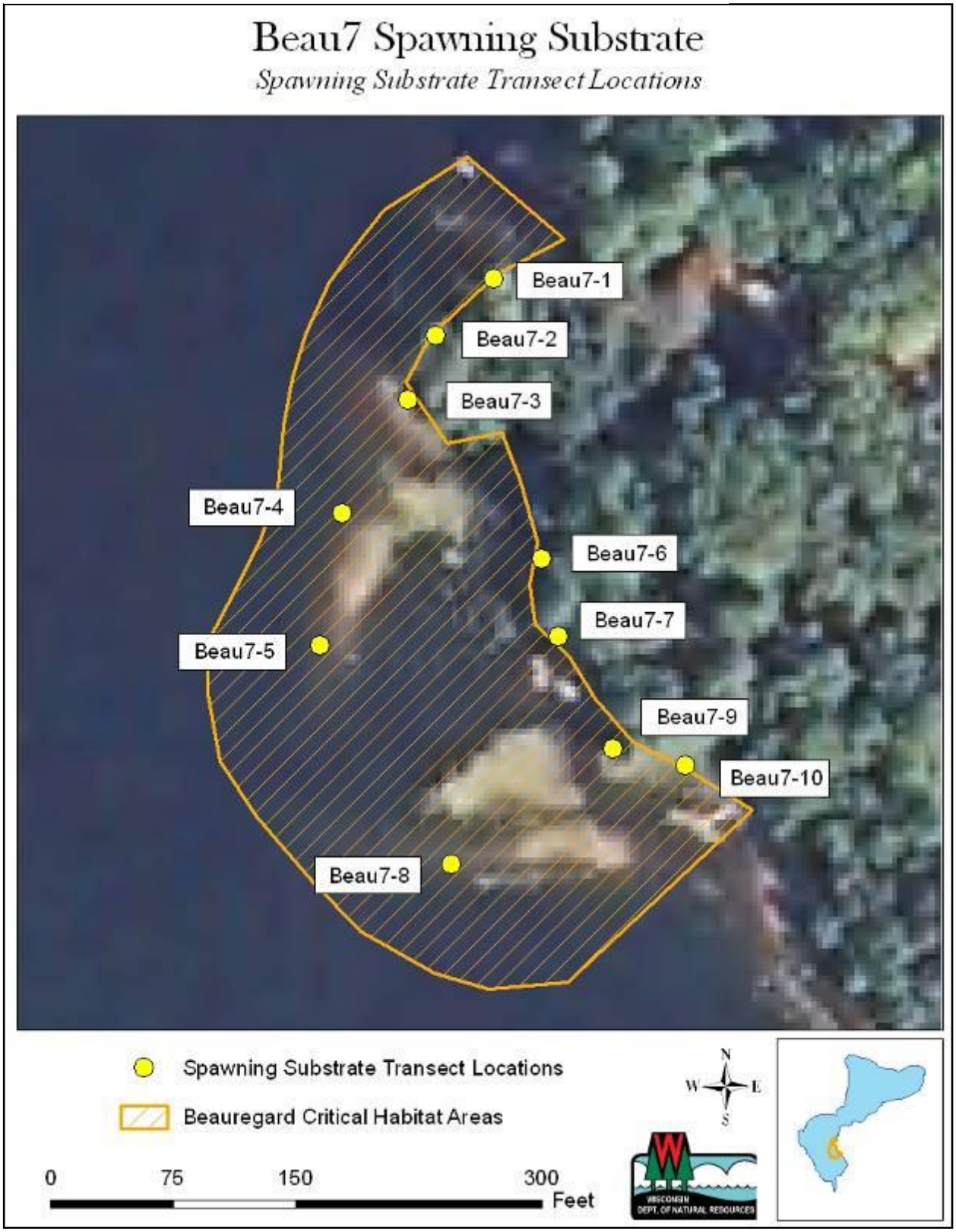


Table 22. Beau7 Spawning Substrate Sampling Transect Data

Transect Number	Quadrat Number	Band Start	Band End	Band Width (m)	Depth at Quadrat (cm)	Embeddedness	Marl	Detritus	Clay	Silt	Sand	Fine Gravel	Coarse Gravel	Cobble / Rubble	Small Boulder	Large Boulder	Bedrock
1	1	0	6.8	6.8	37	4					60	20	10	10			
2	1	0	5.2	5.2	37	4				5	15		10	70			
3	1	0	8	8	44	3				5	20	15	50	10			
4	1	0	4.3	4.3	21	4				5	10	5	20	60			
4	2	4.3	7	2.7	77	1				20	70			10			
5	1	0	12.3	12.3	38	5						10	30	40	20		
6	1	0	1.6	1.6	8					5	95						
6	2	1.6	15	13.4	57			10		70	20						
7	1	0	1.5	1.5	7					5	95						
7	2	1.5	15	13.5	60			15		70	15						
8	1	0	11.4	11.4	36	5		5				10	5	80			
9	1	0	5	5	23	1					30	40	10	20			
9	2	5.8	8.5	2.7	88					30	70						
10	1	0	2.2	2.2	12	4				10		10	20	60			
10	2	2.2	15	12.8	69					40	60						

Table 23. Shoreline Assessment of Beau7				
Feature	**Number**	**Density** (per mile)	**Shoreline Length** (feet)	**% of Shoreline**
Setback Zone				
Homes	0	0		
Accessory Structures	0	0		
Commercial Buildings	0	0		
Riparian Zone				
Homes	1	10.7		
Accessory Structures	0	0		
Commercial Buildings	0	0		
Natural vegetation			394	80.1
Shrub Layer Removed			0	0
Shrub & Ground Cover Removed			0	0
Established Lawn			98	19.9
Pastureland			0	0
Row Crop			0	0
Beach			0	0
Impervious Surface (road, parking lots, etc.)			0	0
Other			0	0
Not Visible			0	0
Total Shoreline			492	100
Bank Zone				
Natural Bank			394	80.1
Soft bioengineering			0	0
Hard bioengineering			0	0
Riprap			98	19.9
Pea Gravel Blanket			0	0
Established Lawn			0	0
Artificial Beach			0	0
Seawalls			0	0
Total Shoreline			492	100
Boat Ramp	0	0		
Stormwater Outflow	0	0		
Littoral Zone				
Piers	2	21.5		
Boat Lifts	0	0		
Swims Rafts/ Trampolines	0	0		
Boathouses	0	0		
Mooring Buoys	0	0		
Dredge channels	0	0		
Commercial Marinas	0	0		
Bridges	0	0		
Plant removal devices	0	0		
Recreational/Public Beaches	0	0		

Management Recommendations

Buffers, overhanging vegetation and fallen trees should remain to provide cover and prevent shoreline erosion which could cause undesirable increases in sedimentation on this valuable walleye spawning shoal, consisting of an abundance of cobble, gravel and sand.

Established lawn within 35 feet of the water's edge should be replanted with native vegetation to comply with Douglas County shoreland zoning ordinance, minimize erosion and pollution, and improve fish and wildlife habitat.

According to the shoreline inventory, there is riprap in Beau7, and it is not recommended because it could disturb spawning substrates. Alternative bank stabilization methods should be used instead of hard armoring like riprap.

Floating, emergent and submersed aquatic plants should be left alone. Do not actively manage aquatic plants unless an aquatic invasive species should establish.

Implement Fish Sticks project. Contact local DNR Fisheries Biologist to investigate funding and technical assistance opportunities.

Beauregard Lake Critical Habitat Site Beau8

Critical habitat site Beau8 was designated a Sensitive Area because of its Emergent and Floating Leaf Vegetation and Extensive Riparian Wetland (Figure 12). Beau8 is 9.8 acres in size and is located in the Southeast bay of Beauregard Lake.

Aquatic Plants were sampled using a standardized Point Intercept method and a summary of the results can be found in Tables 24 and 25. Table 26 summarizes the current management practices within the Setback, Riparian, Bank and Littoral Zones of Beau8.

Table 24. Beau8 Aquatic Plants

Scientific Name	Common Name	Plant Type	FQI Coefficient	Relative Frequency
Sagittaria sp	Arrowhead	Emergent	-	4.2
Brasenia schreberi	Watershield	Floating Leaf	7	29.2
Nymphaea odorata	White water lily	Floating Leaf	6	Visual
Potamogeton natans	Floating-leaf pondweed	Floating Leaf	5	Visual
Sparganium fluctuans	Floating-leaf-bur-reed	Floating Leaf	10	Visual
Eleocharis acicularis	Needle spikerush	Submergent	5	12.5
Isoetes sp.	Quillworts	Submergent	8	4.2
Juncus palocarpus f. submersus	Brown-fruited rush	Submergent	8	12.5
Myriophyllum tenellum	Dwarf water-milfoil	Submergent	10	12.5
Potamogeton bicupulatus	Snail-seed pondweed	Submergent	9	16.7
Potamogeton epihydrus	Ribbon-leaf pondweed	Submergent	8	4.2
Ranunculus flammula	Creeping spearwort	Submergent	9	4.2

Table 25. Beau8 Aquatic Plant Sampling Summary Statistics

SUMMARY STATISTICS	Beau8
Total number of points sampled	23
Total number of sites with vegetation	14
Total number of sites shallower than maximum depth of plants	22
Frequency of occurrence at sites shallower than maximum depth of plants	63.64
Simpson Diversity Index	0.83
Maximum depth of plants (ft)	7.50
Number of sites sampled using rake on Rope (R)	0
Number of sites sampled using rake on Pole (P)	0
Average number of all species per site (shallower than max depth)	1.09
Average number of all species per site (veg. sites only)	1.71
Average number of native species per site (shallower than max depth)	1.09
Average number of native species per site (veg. sites only)	1.71
Species Richness	9
Species Richness (including visuals)	12
Floristic Quality Index (FQI)	25.63

Figure 12. Beau8 Aquatic Plant Diversity Map

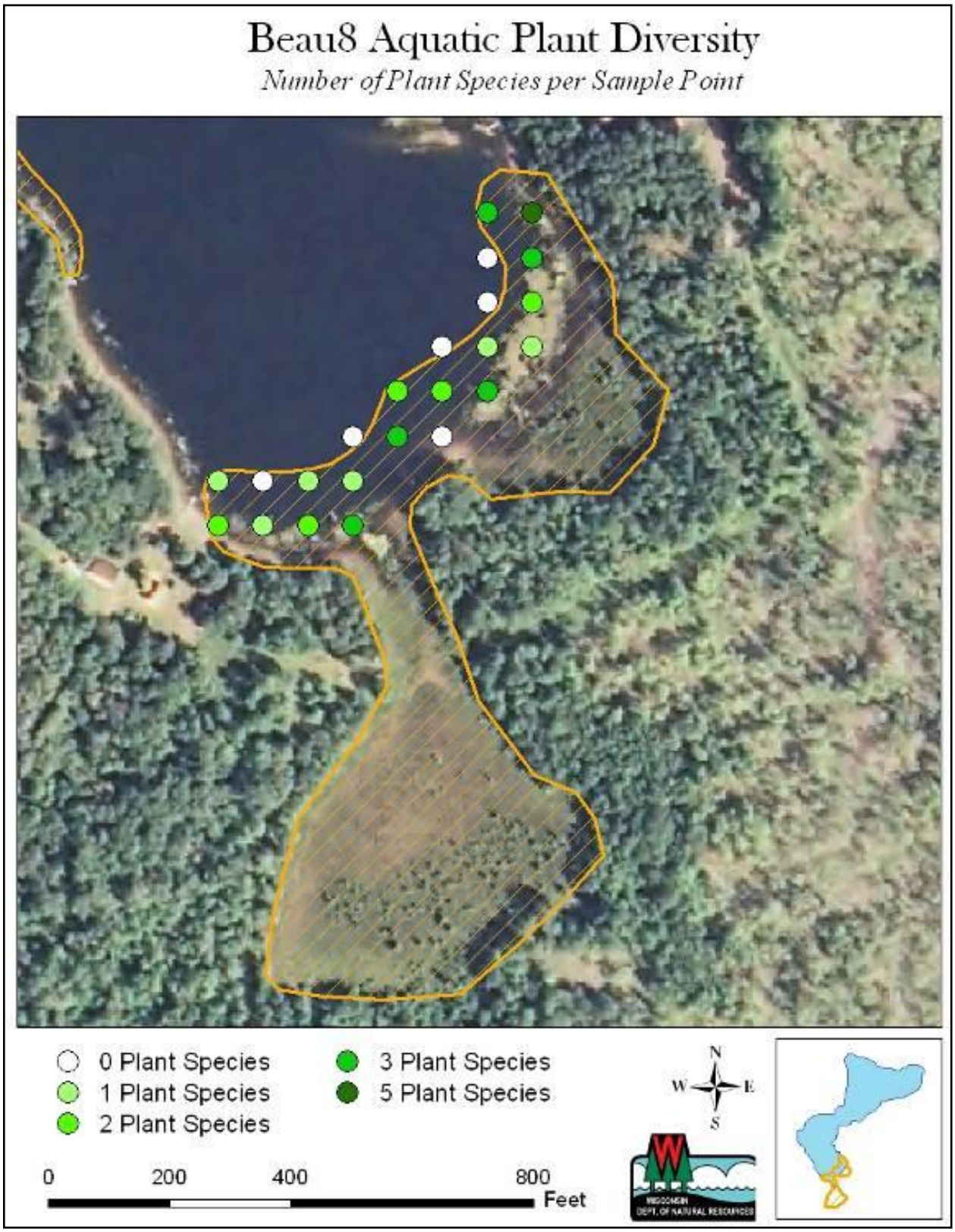


Table 26. Shoreline Assessment of Beau8				
Feature	**Number**	**Density** (per mile)	**Shoreline Length** (feet)	**% of Shoreline**
Setback Zone				
Homes	1	4.9		
Accessory Structures	1	4.9		
Commercial Buildings	0	0		
Riparian Zone				
Homes	1	10.7		
Accessory Structures	0	0		
Commercial Buildings	0	0		
Natural vegetation			951	87.9
Shrub Layer Removed			0	0
Shrub & Ground Cover Removed			0	0
Established Lawn			131	12.1
Pastureland			0	0
Row Crop			0	0
Beach			0	0
Impervious Surface (road, parking lots, etc.)			0	0
Other			0	0
Not Visible			0	0
Total Shoreline			1082	100
Bank Zone				
Natural Bank			1033	95.5
Soft bioengineering			0	0
Hard bioengineering			0	0
Riprap			16	1.5
Pea Gravel Blanket			0	0
Established Lawn			33	3.0
Artificial Beach			0	0
Seawalls			0	0
Total Shoreline			1082	100
Boat Ramp	0	0		
Stormwater Outflow	0	0		
Littoral Zone				
Piers	1	4.9		
Boat Lifts	0	0		
Swims Rafts/ Trampolines	0	0		
Boathouses	0	0		
Mooring Buoys	0	0		
Dredge channels	0	0		
Commercial Marinas	0	0		
Bridges	0	0		
Plant removal devices	0	0		
Recreational/Public Beaches	0	0		

Management Recommendations

Buffers and overhanging vegetation, bog fringe and floating, emergent and submersed aquatic plants should be left alone. Do not actively manage aquatic plants unless an aquatic invasive species should establish.

Established lawn within 50 feet of the water's edge should be replanted with native vegetation to comply with Douglas County shoreland zoning ordinance, minimize erosion and pollution, and improve fish and wildlife habitat.

Implement Fish Sticks project. Contact local DNR Fisheries Biologist to investigate funding and technical assistance opportunities.

According to the shoreline inventory, there is a little riprap in Beau8, and it is not recommended. The wave energy is moderate. Alternative bank stabilization methods should be used instead of hard armoring like riprap.

Beauregard Lake Critical Habitat Site Beau9

Critical habitat site Beau9 was designated a Public Rights Feature because of its Spawning Substrate (Figure 13). Beau9 is 0.9 acres in size and is located along the Southwest shore of Beauregard Lake.

Spawning substrate was sampled using a standardized transect method and the results can be seen in Table 27. Table 28 summarizes the current management practices within the Setback, Riparian, Bank and Littoral Zones of Beau9.

Table 27. Beau9 Spawning Substrate Sampling Transect Data

Transect Number	Quadrat Number	Band Start	Band End	Band Width (m)	Depth at Quadrat (cm)	Embeddedness	Marl	Detritus	Clay	Silt	Sand	Fine Gravel	Coarse Gravel	Cobble / Rubble	Small Boulder	Large Boulder	Bedrock
1	1	0	3.3	3.3	14	1				10	20	50	20				
1	2	3.3	7	3.7	49			10		30	60						
2	1	0	1.1	1.1	5						100						
2	2	1.1	5	3.9	65	3		20		20	40			20			
3	1	0	1.5	1.5	10	2					80	20					
3	2	1.5	6.9	5.4	65			60		30	10						
4	1	0	3.7	3.7	17	2					10	10	10	70			
4	2	3.7	7.6	3.9	62			40			60						
5	1	0	11.3	11.3	46					20	80						
6	1	0	1.4	1.4	3	1					80	5	15				
6	2	1.4	11.2	9.8	49	3					20		10	70			
7	1	0	1.8	1.8	9	2					50	40	10				
7	2	1.8	6.4	4.6	43	3					20			80			
8	1	0	4	4	16	3					15	5		80			
8	2	4	9.2	5.2	67	1				10	20	10	50	10			
9	1	0	2	2	6	2					40	10		50			
9	2	2	11	9	52					20	80						
10	1	0	12	12	41					10	90						

Figure 13. Beau9 Spawning Substrate Transects Map

Table 28. Shoreline Assessment of Beau9				
Feature	**Number**	**Density** (per mile)	**Shoreline Length** (feet)	**% of Shoreline**
Setback Zone				
Homes	1	7.0		
Accessory Structures	1	7.0		
Commercial Buildings	0	0		
Riparian Zone				
Homes	0	0		
Accessory Structures	1	7.0		
Commercial Buildings	0	0		
Natural vegetation			722	95.7
Shrub Layer Removed			33	4.3
Shrub & Ground Cover Removed			0	0
Established Lawn			0	0
Pastureland			0	0
Row Crop			0	0
Beach			0	0
Impervious Surface (road, parking lots, etc.)			0	0
Other			0	0
Not Visible			0	0
Total Shoreline			754	100
Bank Zone				
Natural Bank			754	100
Soft bioengineering			0	0
Hard bioengineering			0	0
Riprap			0	0
Pea Gravel Blanket			0	0
Established Lawn			0	0
Artificial Beach			0	0
Seawalls			0	0
Total Shoreline			754	100
Boat Ramp	0	0		
Stormwater Outflow	0	0		
Littoral Zone				
Piers	2	14.0		
Boat Lifts	1	7.0		
Swims Rafts/ Trampolines	0	0		
Boathouses	0	0		
Mooring Buoys	0	0		
Dredge channels	0	0		
Commercial Marinas	0	0		
Bridges	0	0		
Plant removal devices	0	0		
Recreational/Public Beaches	0	0		

Management Recommendations

Buffers, overhanging vegetation and fallen trees should remain to provide cover and prevent shoreline erosion which could cause undesirable increases in sedimentation on this valuable walleye spawning shoal, consisting of an abundance of cobble, gravel and sand.

Implement Fish Sticks project. Contact local DNR Fisheries Biologist to investigate funding and technical assistance opportunities.

Beauregard Lake Critical Habitat Site Beau10

Critical habitat site Beau10 was designated a Sensitive Area because of its Extensive Riparian Wetland and Emergent and Floating Leaf Vegetation (Figure 14). Beau10 is 6.8 acres in size and is located along the Western shore of Beauregard Lake.

Aquatic Plants were sampled using a standardized Point Intercept method and a summary of the results can be found in Tables 29 and 30. Table 31 summarizes the current management practices within the Setback, Riparian, Bank and Littoral Zones of Beau10.

Table 29. Beau10 Aquatic Plants

Scientific Name	Common Name	Plant Type	FQI Coefficient	Relative Frequency
Sparganium angustifolium	Narrow-leaved bur-reed	Emergent	9	7.7
Brasenia schreberi	Watershield	Floating Leaf	7	38.5
Sparganium fluctuans	Floating-leaf-bur-reed	Floating Leaf	10	Visual
Eleocharis acicularis	Needle spikerush	Submergent	5	15.4
Isoetes sp.	Quillworts	Submergent	8	7.7
Myriophyllum tenellum	Dwarf water-milfoil	Submergent	10	15.4
Nitella	Nitella	Submergent	7	7.7
Potamogeton bicupulatus	Snail-seed pondweed	Submergent	9	7.7

Table 30. Beau10 Aquatic Plant Sampling Summary Statistics

SUMMARY STATISTICS	Beau10
Total number of points sampled	13
Total number of sites with vegetation	8
Total number of sites shallower than maximum depth of plants	11
Frequency of occurrence at sites shallower than maximum depth of plants	72.73
Simpson Diversity Index	0.78
Maximum depth of plants (ft)	6.00
Number of sites sampled using rake on Rope (R)	0
Number of sites sampled using rake on Pole (P)	0
Average number of all species per site (shallower than max depth)	1.18
Average number of all species per site (veg. sites only)	1.63
Average number of native species per site (shallower than max depth)	1.18
Average number of native species per site (veg. sites only)	1.63
Species Richness	7
Species Richness (including visuals)	8
Floristic Quality Index (FQI)	22.98

Figure 14. Beau10 Aquatic Plant Diversity Map

Table 31. Shoreline Assessment of Beau10				
Feature	**Number**	**Density** (per mile)	**Shoreline Length** (feet)	**% of Shoreline**
Setback Zone				
Homes	1	8.0		
Accessory Structures	2	16.1		
Commercial Buildings	0	0		
Riparian Zone				
Homes	1	8.0		
Accessory Structures	0	0		
Commercial Buildings	0	0		
Natural vegetation			525	80.0
Shrub Layer Removed			0	0
Shrub & Ground Cover Removed			0	0
Established Lawn			131	20.0
Pastureland			0	0
Row Crop			0	0
Beach			0	0
Impervious Surface (road, parking lots, etc.)			0	0
Other			0	0
Not Visible			0	0
Total Shoreline			656	100
Bank Zone				
Natural Bank			623	95.0
Soft bioengineering			0	0
Hard bioengineering			0	0
Riprap			33	5.0
Pea Gravel Blanket			0	0
Established Lawn			0	0
Artificial Beach			0	0
Seawalls			0	0
Total Shoreline			656	100
Boat Ramp	0	0		
Stormwater Outflow	0	0		
Littoral Zone				
Piers	1	8.0		
Boat Lifts	0	0		
Swims Rafts/ Trampolines	0	0		
Boathouses	0	0		
Mooring Buoys	0	0		
Dredge channels	0	0		
Commercial Marinas	0	0		
Bridges	0	0		
Plant removal devices	0	0		
Recreational/Public Beaches	0	0		

Management Recommendations

Buffers and overhanging vegetation, bog fringe and floating, emergent and submersed aquatic plants should be left alone. Do not actively manage aquatic plants unless an aquatic invasive species should establish.

Established lawn within 50 feet of the water's edge should be replanted with native vegetation to comply with Douglas County shoreland zoning ordinance, minimize erosion and pollution, and improve fish and wildlife habitat.

Implement Fish Sticks project. Contact local DNR Fisheries Biologist to investigate funding and technical assistance opportunities.

According to the shoreline inventory, there is a little riprap in Beau10, and it is not recommended. The wave energy is moderate. Alternative bank stabilization methods should be used instead of hard armoring like riprap.

Beauregard Lake Critical Habitat Site Beau11

Critical habitat site Beau11 was designated a Sensitive Area because of its Emergent and Floating Leaf Vegetation (Figure 15). Beau11 is 1.6 acres in size and is located along the Western shore of Beauregard Lake.

Aquatic Plants were sampled using a standardized Point Intercept method and a summary of the results can be found in Tables 32 and 33. Table 34 summarizes the current management practices within the Setback, Riparian, Bank and Littoral Zones of Beau11.

Table 32. Beau11 Aquatic Plants

Scientific Name	Common Name	Plant Type	FQI Coefficient	Relative Frequency
Sparganium angustifolium	Narrow-leaved bur-reed	Emergent	9	Visual
Brasenia schreberi	Watershield	Floating Leaf	7	14.3
Nymphaea odorata	White water lily	Floating Leaf	6	14.3
Eleocharis acicularis	Needle spikerush	Submergent	5	28.6
Isoetes sp.	Quillworts	Submergent	8	7.1
Myriophyllum tenellum	Dwarf water-milfoil	Submergent	10	14.3
Nitella	Nitella	Submergent	7	14.3
Potamogeton bicupulatus	Snail-seed pondweed	Submergent	9	7.1

Table 33. Beau11 Aquatic Plant Sampling Summary Statistics

SUMMARY STATISTICS	Beau11
Total number of points sampled	20
Total number of sites with vegetation	12
Total number of sites shallower than maximum depth of plants	20
Frequency of occurrence at sites shallower than maximum depth of plants	60.00
Simpson Diversity Index	0.83
Maximum depth of plants (ft)	9.00
Number of sites sampled using rake on Rope (R)	0
Number of sites sampled using rake on Pole (P)	0
Average number of all species per site (shallower than max depth)	0.70
Average number of all species per site (veg. sites only)	1.17
Average number of native species per site (shallower than max depth)	0.70
Average number of native species per site (veg. sites only)	1.17
Species Richness	7
Species Richness (including visuals)	8
Floristic Quality Index (FQI)	21.57

Figure 15. Beau11 Aquatic Plant Diversity Map

Table 34. Shoreline Assessment of Beau11				
Feature	**Number**	**Density** (per mile)	**Shoreline Length** (feet)	**% of Shoreline**
Setback Zone				
Homes	2	16.5		
Accessory Structures	1	8.25		
Commercial Buildings	0	0		
Riparian Zone				
Homes	0	0		
Accessory Structures	2	16.5		
Commercial Buildings	0	0		
Natural vegetation			508	79.4
Shrub Layer Removed			0	0
Shrub & Ground Cover Removed			66	10.3
Established Lawn			66	10.3
Pastureland			0	0
Row Crop			0	0
Beach			0	0
Impervious Surface (road, parking lots, etc.)			0	0
Other			0	0
Not Visible			0	0
Total Shoreline			640	100
Bank Zone				
Natural Bank			508	79.4
Soft bioengineering			0	0
Hard bioengineering			0	0
Riprap			0	0
Pea Gravel Blanket			0	0
Established Lawn			33	5.2
Artificial Beach			33	5.2
Seawalls			66	10.3
Total Shoreline			640	100
Boat Ramp	0	0		
Stormwater Outflow	0	0		
Littoral Zone				
Piers	2	16.5		
Boat Lifts	0	0		
Swims Rafts/ Trampolines	0	0		
Boathouses	0	0		
Mooring Buoys	0	0		
Dredge channels	0	0		
Commercial Marinas	0	0		
Bridges	0	0		
Plant removal devices	0	0		
Recreational/Public Beaches	0	0		

Management Recommendations

Buffers and overhanging vegetation and floating, emergent and submersed aquatic plants should be left alone. Do not actively manage aquatic plants unless an aquatic invasive species should establish.

Established lawn within 50 feet of the water's edge should be replanted with native vegetation to comply with Douglas County shoreland zoning ordinance, minimize erosion and pollution, and improve fish and wildlife habitat.

According to the shoreline inventory, there is a seawall in Beau11, and it is not recommended. The wave energy is moderate. Alternative bank stabilization methods should be used instead of hard armoring like riprap or seawalls.

Appendix 1. Dates of Critical Habitat Designation, Beauregard Lake, Douglas County

Critical Habitat Designations occurred on 6-23-08; Pamela Toshner, Scott Toshner, Alex Smith, Tim Asplund

Shoreline management inventories occurred on 6-23-08; Pamela Toshner, Scott Toshner, Alex Smith, Tim Asplund

Aquatic plant sampling occurred on 7-8-09; Alex Smith, Jeremiah Fisk

Spawning substrate sampling occurred on 5-28-09; Alex Smith, Paul Riordan

Appendix 2: Notice of Public Information Meeting and Hearing for Proposed Critical Habitat Designation

The Department of Natural Resources has located areas that meet the criteria for Critical Habitat Designation on the Eau Claire Chain of Lakes in Bayfield and Douglas Counties. A public information meeting and hearing has been scheduled to discuss the proposed Critical Habitat Sites on Birch Lake, Bony Lake, Cranberry Lake, Devils Lake, Lower Eau Claire Lake, Middle Eau Claire Lake, Robinson Lake, Shunenberg Lake, Smith Lake, Sweet Lake, and Upper Eau Claire Lake in Bayfield and Douglas Counties.

Because the Critical Habitat Designations are in waters held in trust by the state for all citizens and may be adjacent to private lands, state law provides an opportunity for public input to the Department's decision.

The public informational meeting will be held Saturday, May 15, at 9:00 am at the Barnes Town Hall, 3360 Co Hwy N, Barnes, in Bayfield County. The informational meeting will be an open house format that will allow time to talk with DNR staff, ask questions, and provide written comments regarding the designations.

A public hearing will follow the informational meeting at 11:00 am for persons wishing to present oral testimony. During the hearing, the public can provide factual information about the waterway or the areas proposed for designations in light of the standards below.

Critical Habitat is of vital importance to water quality, hunting, fishing, and natural beauty of Wisconsin's lakes and streams. The Department has made a tentative determination that specific locations in the Eau Claire Chain of Lakes contain:

- Fish and wildlife habitat, including specific sites necessary for breeding, nesting, nursery, and feeding.
- Physical features that ensure protection of water quality.
- Reaches of bank, shore or bed that are predominately natural in appearance (not man-made or artificial) or that screen man-made or artificial features.
- Navigation thoroughfares or areas traditionally used for navigation during recreational boating, angling, hunting, or enjoyment of natural scenic beauty.
- Areas of aquatic vegetation offering critical or unique fish and wildlife habitat, including seasonal or lifestage requirements, or offering water quality or erosion control benefits to the body of water.

The identified locations are eligible for Critical Habitat Designation, and if approved, they will be sufficiently preserved to ensure healthy aquatic systems and protected to maintain the cultural/aesthetic value of lakes to Wisconsin.
Critical Habitat Designation means that special permit conditions or denial of permits may apply to landowners who wish to alter Critical Habitat Areas through activities such as dredging, installing or repairing riprap, grading, irrigation, building dams, or establishing culverts, piers, and docks. Furthermore, in designated Critical Habitat Areas, manual removal of aquatic plants may require a permit, and the chemical treatment or mechanical removal of native aquatic plants is unlikely to be approved.

Draft reports, maps, and more information on Critical Habitat Designations are all available at http://dnr.wi.gov/lakes/criticalhabitat/ or by contacting Alex Smith at (715) 635-4124.

Response to Public Comments on Critical Habitat Designations

Location: Eau Claire Chain of Lakes in Bayfield and Douglas Counties
Public Hearing Held: May 15, 2010 at Barnes Town Hall, Barnes, WI
Comment Period Ended: July 31, 2010

Thank you to everyone who took the time to submit oral and written comments. Seven individuals provided oral comments during the May 15 public hearing. Ten individuals submitted hearing forms but did not speak. During the comment period, the Department received 14 written comments. We organized descriptive comments into the general categories listed below, followed by specific comments and responses.

Category #1 – Comments related to the boundaries and justifications for each Critical Habitat Area

Comment 1 – This comment is in regards to UEC 20 on Upper Eau Claire Lake. The person disagreed that the shoreline to the south of the channel leading to Birch Lake offers any spawning habitat. They went on to say that the area experiences very, very intense pressure from swimmers and boaters as it is primarily sand bottom is this area.

Response 1 – The Barnes Conservation Club in cooperation with the Wisconsin DNR constructed an off shore spawning reef in this area. The intent of the designation in this area is to protect this off shore reef from becoming covered with silt and sand. Electrofishing surveys have documented walleye spawning in this site.

Comment 2 – Some individuals requested that DNR add Critical Habitat Areas to include the Fish Sticks projects.

Response 2 – Critical habitat sites were identified based on the features present during the survey. Fish Sticks projects are ongoing and will be captured if future surveys occur. Property owners who participate in Fish Sticks projects enter into agreements that the habitat structures will remain.

Comment 3 – This comment is in regards to BON 5 on Bony Lake. It was suggested that the DNR add the justifications of Submerged Aquatic Vegetation Important to Fish and Wildlife Habitat and Extensive Riparian Wetland to this area.

Response 3 – The aquatic plant sampling work done by the DNR and the Wetland Delineation work that was done on the Loon Echo Bay Condo property when a Bayfield County Conditional Use Permit was requested provide evidence to support adding these two justifications.

Comment 4 – The submerged island off of Pickle barrel Point on Middle Eau Claire Lake should be added as a Critical Habitat Area because there used to be bulrushes growing there in the shallow water.

Response 4 – A review of historical data and information did not result in evidence that would warrant adding this site. This comment will be considered for future reference and surveys. DNR welcomes any maps, historical narratives, or other evidence documenting the habitat features.

Category #2 – Comments related to our Management Recommendations

Comment 1 – One person would like to see the island on Upper Eau Claire Lake closed to camping due to the partying and erosion from foot traffic.

Response 1 – In the report, we recommended that the foot paths and stairways be repaired to help mitigate the foot traffic and erosion issues. DNR promotes public access and recreational opportunities. This is the only public camping site in the Eau Claire Lakes area.

Comment 2 – A few people commented on the excessive partying and swimming occurring at the mouth of the Eau Claire River and "Pickle Barrel Point," both on Middle Eau Claire Lake.

Response 2 – Swimming is a form of recreation protected by the Public Trust Doctrine. We cannot restrict this right as long as they are not trespassing. Law enforcement should be contacted if trespassing or rowdy behavior occurs.

Comment 3 – A few individuals commented that they disagree that riprap should not be used in certain Critical Habitat Areas.

Response 3 – Riprap is an unnatural structure that creates a physical barrier between the lake and upland areas, and often transfers erosion problems further along the shoreline. Even though properly installed riprap can prevent shoreline erosion, it often does not address the root causes of the shoreline erosion, usually disturbances and impervious surfaces upland from the lake. Naturally vegetated shorelines are the best for reducing erosion.

Natural shorelines along the lakes of Northern Wisconsin are wooded ecosystems. Terrestrial and aquatic animals have evolved with this ecosystem and it is essential to their life cycles. Shifting the near shore cover from vegetation to rock diminishes the ability of the ecosystem to sustain itself.

Comment 4 – One person commented that we add into our Management Recommendations a recommendation that the rivers and channels between the lakes on the Eau Claire Chain be reclassified to a more protective classification.

Response 4 – The Recommendations have been added to the reports.

Category #3 – Comments related to the shoreline restorations that have occurred since the initial field work in 2008

Comment 1 – Some individuals requested that DNR update the shoreline data to reflect the shoreline restorations that have occurred since 2008. Rip rap and seawalls have been removed and some lawns have been replanted since DNR conducted field work.

Response 1 – The recommendations regarding the removal of riprap have been removed from the reports. The riprap and lawn data remains in the tables however, and an asterisk has been added with a footnote stating that shoreline restoration work has occurred since the initial field work. This data is a snapshot in time, and we intend to revisit the lake in the future to make comparisons.

Category #4 – Comments related to navigable channel from Middle Eau Claire Lake to Bony Lake

Comment 1 – Some individuals commented that the channel from Middle Eau Claire Lake to Bony Lake needs to remain navigable as there is no public access on Bony Lake.

Response 1 – The channel between Bony and Middle Eau Claire Lakes is considered navigable.
Public lakes, rivers, and streams that have a bottom (bed) and side (bank), and enough water to float any boat, skiff, or canoe of the shallowest draft on a reoccurring basis are considered navigable. Occasionally, barriers such as wood or plant debris may impede actual navigation, but waters are public even when multiple portages are required to get around obstructions. A waterway does not need to be regularly used for recreational or other general purposes, but is a public waterway based on its *capacity* to be navigable and public. Provided a small boat can float, it is considered navigable. In other words, there is no requirement that the channel provide navigability to large watercraft or boats with inboard motors.

Category #5 – Comments related to Private Property Rights and Current Regulation

Comment 1 – It was stated that government is consistently imposing new regulation, restrictions, laws and taxes on citizens and that Critical Habitat Designations are a ruse of propaganda by the DNR to make a new power grab and infringe on our property rights.

Response 1 – The Critical Habitat Designation program is not designed to infringe upon the *private* rights of riparian citizens. Instead, the Designations are designed to protect the *public* rights held within the Public Trust Doctrine for all citizens, including those yet unborn.

Wisconsin law recognizes that owners of lands bordering lakes and rivers - "riparian" owners - hold rights in the water next to their property. These riparian rights include the use of the shoreline, reasonable use of the water, and a right to access the water. However, the Wisconsin State Supreme Court has ruled that when conflicts occur between the rights of riparian owners and public rights, the public's rights are primary and the riparian owner's secondary.

Comment 2 – County Zoning and the new statewide NR 115 Shoreland Zoning Ordinance are already in place to protect these lakes. If an effort was put into enforcing the regulations which are already on the books, the lakes would be protected.

Response 2 – The county zoning ordinances are specifically for the shoreland zone above the ordinary high water mark (OHWM). The counties only have jurisdiction above the OHWM. The DNR, and thus Critical Habitat Designations, only have jurisdiction below the OHWM.
The counties can and are encouraged to use our reports to further protect terrestrial areas.

Comment 3 - Why are some of the areas listed as “some of the most zoning non-compliant areas on the lake” and still be listed as Critical habitat areas with a long list of vegetation and fish habitat. Wouldn’t those areas have been destroyed?

Response 3 – Not necessarily. CHDs document in-lake habitat, scenic beauty, and wildlife features. It is correct that how people care for their properties can affect all of these things, but overall the Eau Claire Chain shoreline is in good shape. Eventually the cumulative impacts of unhealthy shoreline and land use management can tip the in-lake features out of balance. When this occurs, native fish and wildlife reproduction are reduced or stop altogether, natural scenic beauty diminishes, and water quality declines.

Comment 4 – It is important property owners have a right to enjoy the lake, including having a swimming area.

Response 4 – Property owners certainly deserve to enjoy the lakes. As such, DNR rules provide property owners an area up to 30 feet wide along their shoreline and out into the water where they may manually remove aquatic plants without a permit. Please note this 30-foot corridor correlates to the 30-foot access and viewing corridor that is allowed on the landward property through county zoning, as well.

Category #6 – Comments related to the support for the Critical Habitat Designation

Comment 1 – Many individuals commented on how they support the Designation. Most commented on how much the lakes have changed since they first started visiting the chain and they fully support protecting what is left for future generations.

Response 1 – Thank you for your support.

Comment 2 – Over the last 30 years I have seen the water quality decline on the whole Eau Claire Chain, (Sweet Lake & Upper Eau Claire in particular). I am pleased to see a proposal to maintain/improve shorelines/water quality for future generations. I feel that private property rights should not trump our children's right to clean lakes and rivers.

Response 2 – As previously stated, the Critical Habitat Program is rooted in the Public Trust Doctrine, which protects the public rights of all citizens including those yet unborn. The science shows shoreline disturbance impacts lake health. Critical Habitat Designation is a tool to protect and improve lake health. The tool is more powerful with community support.

Category #7 – Why did the DNR choose to Designate the Eau Claire Chain?

Comment 1 – Why did the DNR choose to do Critical Habitat Designations on the Eau Claire Chain of Lakes?

Response 1 – There are multiple reasons to do the Critical Habitat Designations on the Eau Claire Chain. First of, the Department knows these lakes are really special and would like to keep them that way. The lakes are classified as Outstanding Resource Waters (ORW), muskellunge recruitment waters, walleye recruitment waters, and have exceptional water quality. Also, both the Town of Barnes Comprehensive Plan and the Eau Claire Lakes Management Plan contain recommendations to have a Critical Habitat Designation completed on the Eau Claire Chain of Lakes.

However, the Eau Claire Chain is not alone in the Critical Habitat Process. The DNR has done Sensitive Area Designations on many lakes statewide. Legislative Act 118, which changed the program from Sensitive Area Designations focusing only on aquatic plants to Critical Habitat Designations considering all public rights features. Currently, several lakes in the area are in the process of having Critical Habitat Designations done as well. Some of those lakes include Amnicon Lake, Upper St. Croix Lake, Gordon Flowage, Minong Flowage, Nancy Lake, Granite Lake, and Beaver Dam Lake.

Closing Statement

While the purpose of the Critical Habitat Designations is to guide state decisions for the public waterway and inform lakeshore owners about the high quality habitat in the lake, we value the input given from local citizens and organizations during the process. State statutes grant primary management responsibilities over navigable waters to the DNR (except planning, land, acquisition, and boating ordinance development, where local units of government hold authority). As such, the DNR reviews all state permit applications relating to shoreline activities. Since the Critical Habitat Designations affect the state permit process, it does not significantly affect regulations administered by local

units of government unless they choose to alter their local regulations and ordinances to utilize the Designations.