

Index of Biotic Integrity for Lakes Huron and Michigan Fringing Coastal Wetlands

All values should be based on the median of at least three replicates taken from each zone

Wet Meadow Zone : dominated by *Carex* and *Calamagrostis*.

1. Odonata taxa richness (Genera):

0 ____ score= 1 >0 to 3 ____score= 3 >3 ____score= 5

2. Relative abundance Odonata (%):

0 to <1 ____ score= 1 >1 to 5 ____score= 3 >5 ____score= 5

3. Crustacea plus Mollusca taxa richness (Genera):

<2 ____score= 1 2 to 6 ____score= 3 >6 ____score= 5

4. Total Genera richness:

<10 ____score= 1 10 to 18 ____score= 3 >18 ____score= 5

5. Relative abundance Gastropoda (%):

0 to 1 ____score= 1 >1 to 25 ____score= 3 >25 ____score= 5

6. Relative abundance Sphaeriidae (%):

0 ____score= 1 >0 to 3 ____score= 3 >3 ____score= 5

7. Evenness:

0 to 0.4 ____score= 1 >0.4 to 0.7 ____score= 3 >0.7 ____score= 5

8. Shannon diversity index:

0 to 0.4 ____score= 1 >0.4 to 0.9 ____score= 3 >0.9 ____score= 5

9. Simpson index:

>0.3 ____score= 1 >0.15 to 0.3 ____score= 3 0 to 0.15 ____score= 5

Inner Scirpus Zone : Often dense *Scirpus* mixed with *Pontedaria* and submergents, protected from wave action.

1. Odonata taxa richness (Genera):

0 ____ score= 1 >0 to <1 ____score= 3 1 to 2 ____score= 5 >2 ____score= 7

2. Relative abundance Odonata (%):

0 ____ score= 1 >0 to <2 ____score= 3 2 to 7 ____score= 5 >7 ____score= 7

3. Crustacea plus Mollusca taxa richness (Genera):

0 to 2 ____score= 1 >2 to 4 ____score= 3 >4 to 6 ____score= 5 >6 ____score= 7

4. Total Genera richness:

<10 ____score= 1 10 to 14 ____score= 3 >14 to 18 ____score= 5 >18 ____score= 7

5. Relative abundance Gastropoda (%):

0 ____score= 1 >0 to 2 ____score= 3 >2 to 4 ____score= 5 >4 ____score= 7

6. Relative abundance Sphaeriidae (%):

0 ____score= 1 >0 to 0.05 ____score= 3 >0.05 ____score= 5

7. Ephemeroptera plus Trichoptera taxa richness (Genera):

0 ____score= 1 >0 to 3 ____score= 3 >3 ____score= 5

8. Relative abundance Crustacea plus Mollusca (%):

<8 ____score= 1 8 to 30 ____score= 3 >30 ____score= 5

9. Relative abundance Isopoda (%):

0 ____score= 0 0 to 1 ____score= 1 >1 to 10 ____score= 3 >10 to 20 ____score= 5 >20 ____score= 7

10. Evenness:

0 to 0.4 ____score= 1 >0.4 to 0.7 ____score= 3 >0.7 ____score= 5

11. Shannon diversity index:

0 to 0.4 ____score= 1 >0.4 to 0.9 ____score= 3 >0.9 ____score= 5

12. Simpson index:

>0.3 ____score= 1 >0.15 to 0.3 ____score= 3 0 to 0.15 ____score= 5

13. Relative abundance Amphipoda (%):

If 40 to 60 ____and total score from Inner Scirpus Zone (metrics 1 through 12) is greater than 41, then subtract 5;

If 40 to 60 ____and total score from Inner Scirpus Zone (metrics 1 through 12) is less than 41, then add 5.

***Outer Scirpus Zone* : Sometimes relatively sparse, usually monodominant stands, subject to direct wave action.**

1. Odonata taxa richness (Genera):

0 ____score= 1 >0 to <1 ____score= 3 1 to 2 ____score= 5 >2 ____score= 7

2. Relative abundance Odonata (%):

0 ____score= 1 >0 to <1 ____score= 3 1 to 2 ____score= 5 >2 ____score= 7

3. Crustacea plus Mollusca taxa richness (Genera):

0 to 2 ____score= 1 >2 to 4 ____score= 3 >4 to 5 ____score= 5 >5 ____score= 7

4. Total Genera richness:

<8 ____score= 1 8 to 13 ____score= 3 >13 to 17 ____score= 5 >17 ____score= 7

5. Relative abundance Gastropoda (%):

0 ____score= 1 >0 to 3 ____score= 3 >3 to 5 ____score= 5 >5 ____score= 7

6. Relative abundance Sphaeriidae (%):

0 ____score= 1 >0 to 0.05 ____score= 3 >0.05 ____score= 5

7. Total number of families:

0 to 7 ____score= 1 >7 to 12 ____score= 3 >12 ____score= 5

8. Relative abundance Crustacea plus Mollusca (%):

<8 ____score= 1 8 to 30 ____score= 3 >30 ____score= 5

9. Evenness:

0 to 0.4 ____score= 1 >0.4 to 0.7 ____score= 3 >0.7 ____score= 5

10. Shannon diversity index:

0 to 0.4 ____score= 1 >0.4 to 0.9 ____score= 3 >0.9 ____score= 5

11. Simpson index:

>0.3 ____score= 1 >0.15 to 0.3 ____score= 3 0 to 0.15 ____score= 5

Category Scores

All Vegetation Zones Present

31 to 53 (0 to 15% of possible score)

Extremely Degraded: *In comparison to other Lake Huron wetlands, this wetland is amongst the most impacted.*

>53 to 76 (>15 to 30% of possible score)

Degraded: *The wetland shows obvious signs of anthropogenic disturbance.*

>76 to 106 (>30 to 50% of possible score)

Moderately Degraded: *The wetland shows many obvious signs indicative of anthropogenic disturbance.*

>106 to 136 (>50 to 70% of possible score)

Moderately Impacted: *The wetland shows few, but obvious, signs of anthropogenic disturbance.*

>136 to 159 (>70% to 85% of possible score)

Mildly Impacted: *The wetland is beginning to show signs indicative of anthropogenic disturbance.*

> 159 to 182 (>85 to 100% of possible score)

Reference Conditions: *The wetland is amongst the most pristine of Lake Huron.*

Adjusted Category Scores

Wet Meadow Only

9 to 14; >14 to 19; >19 to 27; >27 to 34; >34 to 39; >39 to 45

Inner *Scirpus* only

11 to 19; >19 to 29; >29 to 41; >41 to 53; >53 to 62; >62 to 72

Outer *Scirpus* only

11 to 18; >18 to 26; >26 to 37; >37 to 48; >48 to 56; >56 to 65

Wet Meadow and Inner *Scirpus*

20 to 33; >33 to 47; >47 to 66; >66 to 84; >84 to 99; >99 to 113

Wet Meadow and Outer *Scirpus*

20 to 32; >32 to 46; >46 to 64; >64 to 82; >82 to 96; >96 to 110

Inner and Outer *Scirpus*

22 to 38; >38 to 55; >55 to 79; >79 to 102; >102 to 119; >119 to 137