Table Titles and Figure Captions

Table 1. Site and sampling information for all locations sampled in 2002 as part of the Great Lakes Coastal Wetlands Consortium pilot study. All available vegetation zones were sampled at every site. Fish could not be sampled at some sites because of insufficient water depths.

Table 2. Chemical/physical and land use and cover data for all sites sampled in 2002.

Table 3. Parameters used in the anthropogenic disturbance ranking for sites where either fish or invertebrates were collected. Data for each parameter from each vegetation zone were converted to ranks and the ranks for all parameters were summed to yield an overall disturbance score. Twenty km land use and cover ranks were double weighted to account for the disproportionate effect of watershed-scale land use on water quality.

Table 4. Disturbance ranking for Inner and Outer *Scirpus* zones (4a), *Typha* zones (4b), and lily zones (4c) for all sites where fish were collected. Mean, standard error and ranges are also included for each parameter within each vegetation type. Ranks for %forest and %wetland+meadow are based on the inverse of these parameters because we suspect that these land cover types contribute positively to near shore water quality.

Table 5. Disturbance ranking for Inner and Outer *Scirpus* and wet meadow zones (5a) and *Typha* zones (5b) for all sites where invertebrates were collected. Ranks for %forest and %wetland+meadow are based on the inverse of these parameters because we suspect that these land cover types contribute positively to near shore water quality. Rank sums were converted to %scores and combined in order to test IBI scores.

Table 6. IBI scores based on the IBI of Uzarski et al. (2004). Metric values as well as scores are included. Disturbance categories as well as scores per vegetation zone and per site are included. Scores for vegetation zones and sites were also converted to %scores to evaluate the IBI against our *a priori* disturbance ranking.

Table 7. IBI %scores and disturbance categories based on the IBI of Uzarski et al. (2004) and IBI %scores and disturbance categories based on a modified IBI (modified from Uzarski et al. 2004 to allow the use of family-level invertebrate data).

Table 8. IBI metric scores for 20 Lake Michigan and Lake Huron wetland sites based on an IBI modified from Uzarski et al. (2004) to allow the use of family-level invertebrate data.

Table 9a. Significant Pearson correlation coefficients between DCA dimensions and disturbance parameters in *Typha* zones. Sixteen of 27 dimensions tested had at least one significant correlation. Disturbance class is indicated (Agriculture, Nutrients, Urbanization) and was determined by the combination of parameters with which the dimension correlated.

Table 9b. Taxa contributing the most inertia to the DCA dimensions significantly correlated with disturbance parameters. Families were selected as candidates for IBI metrics if they contributed significant inertia (among five greatest or smallest coordinate scores in a dimension) and were found at five or more sites.

Table 10. All significant Pearson correlations between candidate IBI metrics from the literature and disturbance parameters for *Typha* zones.

Table 11. All significant correlations between taxa abundances and disturbance Parameters in *Typha* zones. Taxa were found at 5 or more sites and identified in DCA dimensions as being associated with either high or low disturbance.

Table 12. Candidate IBI metrics for *Typha* zones. Disturbance classes that metrics appear to be sensitive to are listed. Positive responses indicate that the metric value increases with disturbance.

Table 13. Scores for 30 candidate IBI metrics for *Typha* zones. The nine metrics retained for the final IBI are in bold. Scoring thresholds for each metric were identified at the 25^{th}, 50^{th} and 75^{th} quartile of metric values. Where appropriate, a fourth scoring range (equal to 7 points) was added.

Table 14. Preliminary invertebrate-based IBI metrics for Great Lakes coastal wetland *Typha* zones.

Figure 1. Locations of all sites sampled in 2002 as part of the Great Lakes Coastal Wetlands Consortium pilot study. Fish, macroinvertebrates, chemical/physical and land use and cover parameters were collected at most sites.

Figure 2. Correlation between IBI scores based on Uzarski et al. (2004) and disturbance scores for 41 sites located throughout the Great Lakes basin. Disturbance scores were calculated *a priori* based on chemical/physical and land use and cover parameters. The correlation between IBI scores and disturbance scores was significant (r=0.674).

Figure 3. Correlation between IBI scores based on Burton et al. (1999) and disturbance scores for 28 *Typha* sites. Sites were located throughout the Great Lakes basin and the correlation was significant (r=0.41).

Figure 4. Detrended correspondence analysis of invertebrates found in *Typha* zones. One hundred sixty eight taxa were included in the analysis. Dimension 1 is best described as a gradient based on which lake a site was located (Huron to Ontario to Michigan). This was somewhat correlated with wetland type. Sites are labeled and taxa are represented by dots.

Figure 5. Detrended correspondence analysis of 30 invertebrate taxa found in *Typha* sites. Mean abundances of triplicate samples per site were used in the analysis. Dimension 1 is best explained as a gradient based on lake and/or ecoregion.

Figure 6. Detrended correspondence analysis of 69 invertebrate families found in *Typha* sites. At this reduced taxonomic resolution, the influence lake/ecoregion overwhelms dimension 1.

Figure 7. Relationship between IBI scores for Typha zones and our *a priori* disturbance gradient. Twenty-eight sites are include and a significant Pearson correlation coefficient was found (r=0.538).

Figure 8. Detrended correspondence analysis of 237 invertebrate taxa in coastal wetlands of all five Great Lakes. Labels represent vegetation zones (within sites) and are color-coded by lake.

Figure 9. Detrended correspondence analysis of 237 invertebrate taxa in coastal wetlands of all five Great Lakes. Labels represent vegetation zones (within sites) and are color-coded by ecoregion.

Figure 10. Detrended correspondence analysis of 237 invertebrate taxa in coastal wetlands of all five Great Lakes. Labels represent vegetation zones (within sites) and are color-coded by wetland type.

Figure 11. Detrended correspondence analysis of 237 invertebrate taxa in coastal wetlands of all five Great Lakes. Labels represent vegetation zones (within sites) and are color-coded by vegetation type.

Figure 12. Invertebrate communities in Great Lakes coastal wetlands (represented by DCA dimension 2 scores) vs. ambient chemical/physical condition and surrounding land use and cover (represented by PC 1 scores). The relationship had a significant Pearson correlation coefficient (r=0.424) and represents the response of community composition to ambient conditions. PC 1 represents a productivity to respiration gradient with decreasing pH and DO and increasing SRP concentrations with increasing PC 1 scores. Arrows were drawn to show the response of communities within vegetation zones to ambient conditions.

Figure 13. Relationship between fish and invertebrate communities (represented by DCA dimension scores) for 132 vegetation zones. The relationship was significantly

correlated (r=0.289) and represents the similar response of both communities to ambient chemical/physical conditions. Curved lines were drawn in to represent the higher variability in fish and invertebrate communities of *Scirpus* zones relative to *Typha* zones.