FISH COMMUNITIES

ICHTHYOLOGY LABORATORY

Location: Winona-area lakes and streams

Objective: Become familiar with the local fishes in various lakes and streams.

Hypothesis: Fish communities differ dramatically among lake and stream habitats around Winona.

Agenda:

1) Collect fishes from local streams and lakes using seines, electrofishers, or other collecting gear.

2) Count and measure (total length, mm) the fish collected and record these data on the data sheets provided.

3) Release all fish back to their habitat.

Analysis:

1) Using data from **ALL** sites examined by the class, create a single, length-frequency graph (bar chart) for the most abundant fishes (brown trout, bluegill, shorthead redhorse and slimy sculpin) all combined on the same graph. This graph (or figure) should present length categories (cm) on the X axis, and frequency (as a % of total fish for that species) on the Y axis, and have separate colored bars for each species of fish. (For example, if 3 of the 10 fish collected for one species were in the 10-cm category, that bar would be 30%.) Label this as **Figure 1**, and include a descriptive heading identifying the contents of the figure, the species of fishes (including scientific names), the total numbers of fish examined of each species (sample sizes), and location and date of fish

collection.

2) Using data from **ALL** fish caught at each site, compare the fish community of each site to the communities of fish at each of the other sites. Use the Bray-Curtis similarity index in this comparison. A B-C index value > 0.6 indicates that the two communties being compared are similar (not significantly different), whereas a value <0.6 indicates that the two communities being compared are significantly different. Present these data in a simple table. This table (**Table 1**) should include a descriptive heading identifying the contents of the table and location and date of fish collections.

3) Calculate a Simpson diversity index for the entire fish community collected at **EACH** site. Present these values as a simple bar chart, with separate bars for each site. Label this as **Figure 2**, and include a descriptive heading identifying the contents of the figure and location and date of fish collections.

4) Write a narrative detailing your findings for this lab (this should probably be at least two paragraphs in length). Use the figure and the similarity and diversity indices as points of reference, and call the reader's attention to the main findings of the lab exercise summarized in the figure and supported by the indices. Point out the patterns and trends in the data presented in the figure, and explain what the indices indicate about the fish communities of the habitats being compared. For example, how many different species of fish were collected? Were the most abundant fishes at each site similar in size at each site? Were similar fish communities present at all sites? Did each fish community have similar diversity?

Equipment:
Seines, electrofishers, nets, buckets, waders, data sheets