Calculate Species Diversity Using Shannon-Wiener Diversity Index: Step 3

The Shannon-Wiener Diversity Index is one of the most widely used species diversity indices for examining overall community characteristics. It is derived from a function used in the field of information and has been adapted by ecologists to describe the average degree of uncertainty of predicting the species of an individual picked at random from the community. The uncertainty of occurrence increases both as the number of species increases and as the individuals are distributed more and more evenly among the species already present.

When properly manipulated, it will always result in a diversity value (H') ranging between 0 (indicating low community complexity) and 4 (indicating high community complexity). It is not necessary to key all organisms to their specific species nomenclature (i.e. organisms not expediently identified may be assigned numeric values such as species 1, 2, 3). However, in order to derive accurate diversity values, all organisms should be keyed to the lowest possible like taxonomic level.

1. Using the data below and the correction factor found in Step 2, complete the Biodiversity Step 3 Worksheet to calculate the Shannon-Wiener Diversity Index.

   NOTE: This is a spreadsheet and has two tabs displaying two different pages at the bottom left of the worksheet. The first is the worksheet to determine the Shannon-Wiener Species Diversity Index. The second calculates Standard Deviation.

2. Extra Credit: Calculate the Standard Deviation using Species Diversity.

Species	Number of Individuals In Each Replicate						
	1	2	3	4	5	6	7
Stonefly Larva (Plecoptera)	4	1	1				
Caddisfly Larva (Tricoptera)	1	3	4				
Whirligig Beetle (Coleoptera)	2	3	4				
Crayfish (Cambarus)	3	0	1				
Amphipoda A	0	3	0				
Isopoda A	2	2	1				