**Species Richness**

Species richness is a measure of the number of species found in a sample. Since the larger the sample, the more species we would expect to find, the number of species is divided by the square root of the number of individuals in the sample. This particular measure of species richness is known as *S*, the Menhinick's index.

Where *s* equals the number of different species represented in your sample, and *N* equals the total number of individual organisms in your sample.

**Species Diversity**

Species diversity differs from species richness in that it takes into account both the numbers of species present and the dominance or evenness of species in relation to one another. As a measure of species diversity, we will calculate the Shannon index, *H*. Interestingly Shannon, a physicist, developed the index as a formula for measuring the entropy of matter in the universe. It turns out that the mathematical relationships hold true whether one is dealing with molecules in solution or species in an ecological community.

Where *ni* is the total number of individuals “*i*” in the population, *N* is the total number of individuals across the whole population, and *ln* is the natural log.

**Shannon Evenness Index of Diet Diversity**

Where *S* is species richness, *H* is species diversity, and *ln* is the natural log.

Keylock, C. J. 2005. Simpson diversity and the Shannon–Wiener index as special cases of a generalized entropy. – Oikos, 109:203-207.