

Diversity in Microcosms for Introductory Biology

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Diversity is an important component in our Introductory Biology sequence; however, bringing home the idea of biodiversity can be a challenge. Students relate biodiversity to programs on the Discovery channel and have little concept of their local biodiversity. The creation of Winogradsky columns during the first week of labs in the fall allowed students to investigate the local diversity of microbes and invertebrates over the subsequent 8 months. Each student constructed a Winogradsky column from soil and water and included sources of carbon, sulfur, and other minerals. Columns were maintained on the lab windowsill throughout the observation period. Column communities and diversity differed significantly depending on the source of the original soil and water, the nutrients supplied and the proportion of masking on the column. During the year, the students sampled their columns for bacteria, cyanobacteria, protists, algae, fungi, moss, plant seedlings and small invertebrates (e.g. nematodes, mites, insect larvae, rotifers, crustaceans, earthworms). Not only did each student observe a wide diversity of organisms in their own column, they also observed a different suite of organisms in other students' columns. These columns also permitted discussions of food webs and ecological communities. For each student, the value of their own personal Winogradsky column using their own garden or local soil was tremendous in terms of knowledge and enthusiasm.

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