ASSOCIATING MICROINVERTEBRATE SPECIES RICHNESS AND PRIMARY PRODUCTION IN DESERT URBAN PONDS.

Lizette Gonzalez, Eric Suh, Alyssa Calderon, Patrick Brown, Elizabeth J. Walsh

Department of Biological Sciences, The University of Texas at El Paso, TX, USA

ABSTRACT:

Urban ponds provide a number of ecosystem services such as preventing erosion, locally improving water quality and retaining flood waters. Despite these benefits, anthropogenic activities have negatively impacted the ecology of these ponds. Microscopic invertebrates such as rotifers serve as important indicators of water quality and trophic conditions of wetlands. Chlorophyll a is a measure of primary productivity of aquatic systems; high primary production may be indicative of eutrophic conditions which may limit local diversity. Therefore, estimates of chlorophyll a concentration may relate to microinvertebrate species richness. In this study, samples of plankton and aquatic plants were collected from one natural and five artificial ponds in urban regions of El Paso, TX and Las Cruces, NM. In the set of studied ponds, rotifer species richness ranges from 6 to 21 and totaled up to 31 for microinvertebrate species. Levels of chlorophyll a were determined through spectrometry. Values for chlorophyll a ranged from 0.515 to 22.92 ug/cm2 in the periphyton, and from 2.23 to 26.16 ug/L in the phytoplankton, suggesting that these sites have mesotrophic conditions. A DCA of collected parameters showed that dissolved oxygen content, phytoplankton chlorophyll a concentration and specific conductance were the parameters with the highest influence on species presence/absence. The ponds studied showed a relatively high dissimilarity based on the Bray-Curtis dissimilarity index (~0.73 for most comparisons). This dissimilarity implies that sampling more ponds may be necessary to better understand how chlorophyll a relates to diversity in the desert urban ponds of this region.