

Vernal pools are temporary wetlands that fill in the early spring and dry by late fall. This seasonal drying prevents the establishment of predatory fish populations, which allows many species of amphibians, macroinvertebrates, and plants to utilize these habitats for parts of their life cycle in the absence of top predators. **Often, a single vernal pool can contain a greater diversity of organisms than the entire surrounding terrestrial habitat, such that these wetlands have been called “keystone ecosystems.”**

Vernal pools have been widely studied because of the amphibian species that breed in their waters. As a result, much is known about physical habitat requirements for amphibians and how alterations to them impact their population viabilities. However, the attention given to frogs and salamanders comes at a cost to the invertebrates that inhabit vernal pools. Many of these organisms are temporary water specialists with important roles in ecosystem functioning, such as nutrient and energy cycling. Additionally, macroinvertebrates are important components of food webs within and around vernal pools, as they are predators and prey of the resident amphibians and many other organisms. Despite this, there is limited information regarding the influences on invertebrate diversity in vernal pools, such that most understanding of macroinvertebrate regulators has been inferred from other disciplines in aquatic ecology. **My research aims to understand how terrestrial habitat quality influences macroinvertebrate communities in vernal pools.**

Trees are the biggest contributors to vernal pool food webs. In autumn, leaves fall into the wetland and are colonized by decomposers, who then serve as food sources for other organisms. Since different types of leaves vary in their nutrient content and availability, they can affect the microbes feeding on them. Additionally, the presence of secondary compounds (phenolics) in leaf litter can leach into the water and harm wetland species. Leaf litter has been shown to affect vernal pool amphibians in a variety of ways, however, the impacts on macroinvertebrate communities are much less understood. The leaf litter from invasive plant species is of particular concern, as it could be altering the microbial (and subsequently all other) organism communities in vernal pools. Others have documented severe survival reductions in tadpoles exposed to secondary compounds from purple loosestrife (a wetland invasive). To my knowledge, no one has yet examined how leaf litter (whether from an invasive species or not) impacts macroinvertebrates. **As such, I’m interested in finding a SetGo student willing to examine how the litter from invasive wetland plants affects the invertebrate communities of vernal pools.** Ideally, we could do this by creating artificial wetlands (in fish tanks or cattle watering troughs) with known invertebrate communities, however, I’m open to suggestions (this is your project, after all). Interested candidates should have some working knowledge of ecology, a strong work ethic, and a willingness to learn some muddy boots field ecology (oh, and it certainly helps to not be squeamish around bugs and mosquito-based harassment...).

Does this sound like you? Contact Mike Plenzler (maplenz@bgsu.edu) or drop by 331 Life Sciences.