

**Title: "The community ecology of a freshwater cleaning symbiosis.**

Summary: Symbioses remain an understudied element of community dynamics. Nevertheless, some symbioses can play important roles in ecosystems, especially when the symbiosis involves keystone species or ecosystem engineers. I use a cleaning symbiosis between crayfish and their annelid symbionts to explore the roles of symbiosis in communities. These annelid symbionts have been shown to have strong, but context dependent influences on their hosts. Using this system, I explore a) processes that generate symbiont diversity in this system, b) the influence of the symbiosis on whole stream communities, and c) how invasion by non-native hosts affects the native host-symbiont relationship and how it might contribute to increased rates of invasion.