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Effects of Leaf Tannin Concentration on Aquatic Beetle Colonization

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Tannins are organic secondary compounds stored in leaves. They protect plants from disease and herbivory. As leaf litter decomposes, tannins can leach into and accumulate in aquatic systems. This could have a significant impact on aquatic organisms, especially those that rely on ephemeral bodies of water for reproduction, shelter, and/or food. Amphibians are believed to be highly susceptible to tannins, with high tannin concentrations having been found to have deleterious effects on tadpoles. Currently, little information exists on the effects of tannins on aquatic invertebrates. This study aimed to investigate the relationship between tannin concentration and habitat selection in aquatic beetles. 80-grams of leaves from 15 tree species were collected (3 per species, 45 total) from different locations in Lincoln Parish, LA. 45 wading pools were set up at LA Tech's South Campus. Each pool contained leaf litter from one of the 15 tree species. Beetles were collected from the pools every 3 to 4 days over the course of 3 weeks during May 2018. Over the course of the experiment, water samples were taken three times for tannin concentration analysis. Beetles were identified to species. Regression was used to examine the relationship between tannin concentration with colonizing beetle abundance. Total beetle abundance, *Copelatus glyphicus* abundance, and *Laccophilus fasciatus* abundance were positively correlated with tannin concentration. Tannin concentration had no effect on total *Enochrus* abundance. Overall, beetles preferred the Chinese Tallow leaves. This preference may prove maladaptive, as tannins have been found to negatively impact some terrestrial species of invertebrates. Members of the genus *Enochrus* showed no significant preference for either tannin-rich or tannin-poor pools. Our results suggest that aquatic beetles may significantly vary in tannin tolerance.