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**Fungal Colonization of Leaf Litter from Native and Invasive Riparian Trees in Forested and Developed River Reaches on the Island of Hawai'i.** Breakdown of inedible compounds in decaying leaf matter in freshwater systems is attributed to the action of fungal processing. In continental systems, this conditioning is the initial step in a food web for shredders and other organisms. However, Hawai'i lacks many of the detrital invertebrates typically found in stream communities, making fungal colonization the primary factor in breakdown of leaf litter. Concentrations of ergosterol, a steroid unique to fungal cells, was measured from leaf litter in the Wailuku River on the Big Island to directly quantify fungal colonization, providing us with the first data set ever to consider the role fungal colonies play in leaf litter breakdown in Hawaiian streams. Fungal biomass and decomposition rates were compared between senesced leaves from the dominant native canopy tree *Metrosideros polymorpha* ('ōhi'a) and the common invasive N-fixer *Falcataria moluccana* (albizia), in an impacted site in a developed area and a relatively non-impacted forest site along the Wailuku during wet and dry seasons in 2005 and 2006. Preliminary results show no difference between sites. However, although over time fungal colonization on 'ōhi'a leaves eventually matched or exceeded that of albizia, albizia was found to have significantly higher initial fungal biomass and subsequently, a more rapid rate of decomposition. Substantial inputs of albizia to freshwater streams in Hawai'i has the potential to dramatically alter the dynamics of the stream community by aiding in the establishment of introduced exotics, and increasing nitrogen levels in Hawaiian rivers and their downstream coastal areas.