

Kennedy, T.A., J.C. Finlay, S.E. Hobbie. August 7, 2002. "Exotic saltcedar alters the resource base in a spring-fed desert stream food web." Ecological Society of America, Annual Meeting, Tucson, Arizona.

ABSTRACT- In Jackrabbit Spring, a spring-fed stream in southern Nevada, organic matter inputs shift from algal production near the springhead to bulrush, an emergent macrophyte, downstream, because of a strong downstream temperature gradient. However, a dense stand of exotic salt cedar mid-reach shades Jackrabbit stream, limiting algal and bulrush production and thereby changing the dominant organic matter to seasonally available salt cedar litter. Along the downstream gradient, we analyzed the dominant organic matter sources (algae, salt cedar litter, and bulrush), and macroconsumers including 2 native fish (speckled dace and pupfish) and introduced screw snails, crayfish, and mosquitofish in winter 1999 and summer 2000 for $\delta^{13}\text{C}$. Despite some overlap in $\delta^{13}\text{C}$ of algae, bulrush, and salt cedar, separation of carbon sources was possible because of linear downstream algal $\delta^{13}\text{C}$ enrichment due to a downstream decrease in CO_2 concentrations. $\delta^{13}\text{C}$ for pupfish, dace, and screw snails mirror this trend during both seasons, indicating strong reliance on algal-based production. In contrast, $\delta^{13}\text{C}$ for crayfish and mosquitofish indicate reliance on algal-based production in the summer. However, in winter they appear to rely on allochthonous salt cedar-based production where salt cedar is present and on algal-based production where salt cedar is absent. Mosquitofish and crayfish are proportionally most abundant at salt cedar sites. Thus, the invasion of an exotic riparian shrub (salt cedar) in this system appears to promote the persistence of exotic aquatic consumers.