**An Ecological Comparison Between Resource Subsidies: Pacific Lamprey and Pacific Salmon**

Jocelyn Wensloff, Faculty Mentor(s) Clay Arango (Biological Sciences, CWU Biological Sciences

<https://www.youtube.com/watch?v=IO163-RoBV8>

**Abstract**

The regular return of resource subsidies in the form of anadromous fish are especially important in the Pacific Northwest where many streams are nutrient limited. Thus far, stream resource subsidy studies in the Pacific Northwest have focused on Pacific salmon (Oncorhynchus spp.), overlooking other anadromous fish species such as Pacific lamprey (Entosphenus tridentatus) as potential subsidies. In order to better understand how Pacific lamprey could subsidize stream food webs, I used a modified nutrient diffusing substrate (NDS) approach to compare the stream ecosystem response to nutrients transported by Pacific lamprey versus Chinook salmon in both summer and fall in the Upper Yakima River Basin. I measured chlorophyll a as the autotrophic food web response and community respiration (CR) as the heterotrophic food web response. Chlorophyll a responded equally to lamprey and salmon but was significantly higher in summer. Alternatively, CR had a stronger response to salmon compared to lamprey and was significantly higher in fall compared to summer. These results indicate that Pacific lamprey are equivalent to salmon as a resource subsidy for the autotrophic food web. Moreover, lamprey spawning occurs in the summer when salmon do not spawn, possibly extending the temporal subsidy provided by all anadromous fish returns in Pacific Northwest streams. These data indicate that anadromous lamprey and salmon are equally important in stimulating algal growth in the summer and can stimulate stream food web activity which would directly support both lamprey and salmon. These results should be considered in justifying future lamprey restoration efforts.